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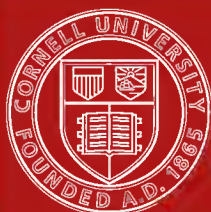
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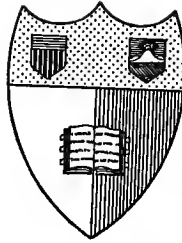


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EDUCATIONAL SURVEY
OF THE
PUBLIC SCHOOLS
OF
BROOKLINE, MASS.



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EDUCATIONAL SURVEY
OF THE
PUBLIC SCHOOLS
OF
BROOKLINE, MASS.



1917
PUBLISHED BY THE SCHOOL COMMITTEE

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SCHOOL SURVEY OF BROOKLINE, MASSACHUSETTS

SPRINGFIELD, MASS., April 23, 1917.

To the School Committee of Brookline:

I have the honor to present herewith a report of an educational survey of your schools made under authority voted at your meeting held June 5, 1916. During the month of June of that year preliminary studies were made and a Plan of Survey was drawn and submitted for your approval.

In carrying out the Plan of Survey I secured the assistance of a corps of workers each of whom had a broad knowledge of schools and school procedure in general, and in addition expert knowledge in a particular field. Though each of my colleagues gave chief attention to that phase of the work which represented his predominant interest there was more or less overlapping and thus the view of each worker was checked by one or more members of the staff as well as by the Director of the Survey who assumes full responsibility for the report as a whole.

THE SURVEY STAFF.

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THE METHOD OF THE SURVEY.

It was not convenient for all members of the Survey Staff to be in Brookline at the same time. In this there was a certain advantage for since their observations on the ground were distributed over a period of six months the Director was able to take up with each member in turn the particular phase of the study allotted to him and in this way to gain the necessary insight into the complex problems involved which would enable him to present a unified report. Though the Director holds himself responsible for each and every part of what is here presented, the report represents the combined judgment of all who participated in the Survey. As the work progressed there were frequent consultations and toward the close formal conferences were held at which every item here presented was dully discussed.

Conferences were held with members of the School Committee, with the Superintendent, the principals, the teachers and others; classrooms were visited and tests were made of children's work in the common branches. Co-operation of all connected with the schools and with others having knowledge of them was sought, so that every one might show his point of view concerning any matter under examination. Other sources of information were consulted, such as printed reports, — nation, State, and town, and those of the School Committee. The published Courses of Study and the rules of the School Com-

mittee were examined. An expert accountant was employed to secure first-hand information from financial records in Brookline, and another to gather statistical data obtainable only by examination of unpublished records in the Bureau of Education at Washington, D. C.

It was the aim of the Survey Staff to specify and commend the good found and to indicate places and means for improvement. They found much to admire. Nevertheless the space in the report devoted to the approval of those features which attracted the favorable notice of the Survey Staff is necessarily less than that devoted to the shortcomings of the system and the changes recommended; for in suggesting changes a full statement of each need as seen by the Survey Staff must be followed by an equally clear and detailed statement of the remedy recommended in each instance. This takes much space, but since constructive criticism is what the School Committee had in mind in ordering the Survey, the attitude of the Survey Staff in the form of presentation is not likely to be misunderstood.

The co-operation which was accorded the Survey Staff by the School Committee and its officers and employees from the beginning to the end of the study was of the most satisfactory character. The Superintendent placed at our disposal all of the facilities of his office, and gave time and attention without stint to everything which could aid us in getting a detailed and comprehensive view of the schools in all phases of their activity. His attitude of cordial co-operation was reflected in the teachers. They were most cordial and helpful. There was an entire absence of any appearance of constraint in their dealings with us. They wished us to see the schools in their every-day aspect and to that end proceeded with regular work except when asked to make way for the "standard tests." Their valuable assistance in the testing is acknowledged in the chapter devoted to that phase of the Survey. I take pleasure here in expressing my appreciation of the highly professional attitude of the Brookline teaching force as shown during the months in which the Survey was in progress.

Brookline has been a pioneer in nearly all phases of education which are agitating the public mind today. Scarcely a feature of school work which has justified itself and become permanent in any progressive community the country over is lacking. It is inevitable that a system so long in existence should have inheritances from the past that are sources of embarrassment — for instance, buildings not modern, but too good to be abandoned, and traditions which have almost the force of laws. Many of the criticisms made in this report would apply with equal or even greater force to every school system of equal age. Criticisms and the corresponding recommendations, it will be observed, grow largely out of questionable economy in the amount of supervision furnished, out of old conditions and out of forms of organization that are traditional. It is the belief of the Survey Staff that a community imbued with so high a degree of civic pride, so willing to pay liberally for what it considers to be good, and having in its employ a school staff so capable and forward-looking, will leave no means unused to free its schools from every tradition which hampers their best development.

Respectfully submitted,

JAMES H. VAN SICKLE,
Director of the Survey.

SUMMARY OF CONCLUSIONS.

THE BROOKLINE COMMUNITY.

1. Brookline is a wealthy town. In both assessed and real valuation per capita of population it is one of the highest in the United States.

2. Brookline has always in recent years been liberal in support of her public schools, one of the most liberal in the State, always ranking close to the top in a table in the State report showing the amount spent per pupil. At the same time in her amount per \$1000 of assessed valuation of taxable property that has been expended she has uniformly been among the very lowest. She is, in fact, so wealthy that the largest appropriation put upon her causes but the slightest strain.

3. Brookline is a progressive residential town whose population is increasing more rapidly than the normal for cities of the same population group, a town of wealth and culture, of many eminent men and women, of many leaders, of many unmarried females, of many servants, and hence a town of few children, a fairly large proportion of whom are of foreign birth and of low economic condition; a community which within itself furnishes but meager vocational opportunities for these children, yet which, being really a part of the Boston metropolitan district, may afford for all children a far wider range of opportunity than most cities of its size.

DISTINCTIVE FEATURES OF THE BROOKLINE SCHOOL SYSTEM.

1. The system comprises the kindergarten, the elementary school of nine grades and a high school of four grades.

2. The system is characterized by liberal expenditures, by adherence to the best traditions of school management as regards the respective functions of School Committee and Superintendent as chief executive officer, by the very unusual freedom accorded the teachers, by short daily sessions ending at 1.30 P.M., by ab-

sence of hard and fast district lines, by the one-year interval between classes, by whole class versus individual promotion and by small classes both in elementary schools and high schools.

3. The amount of supervision provided is exceptionally small, so small as to be out of harmony with the standards set by the town in its expenditures generally. The Superintendent needs an assistant and an additional clerk. Additional supervision is needed in the special branches.

SCHOOL FINANCES.

1. In this report the comparison of costs is limited to cities that are most like Brookline in wealth, intelligence of the population, proximity to urban centers, absence of industrial and commercial life and reputation of schools — all of which factors have a tendency to promote high costs of education.

2. Brookline ranks third among the 17 selected cities in total cost of elementary schools. Her third rank is made up of a combination (1) of relatively high expenses for principals, janitors, textbooks, and heat, light, power, and janitors' supplies, (2) of relatively very low expenses for supervisors and libraries, and (3) of costs for the other items lying between these two expenses.

3. On the whole, there is a better distribution of expenses in the secondary schools than in the elementary schools.

4. The wealth of Brookline is so great and the number of children enrolled in proportion to her population is so small when compared with other cities that notwithstanding she gives to the support of her schools almost as much as any other city for each pupil, she still gives the least per cent of her total town expenditure to schools. In order to come up to the median of the selected group of cities she would have to increase her school expenses by 83 per cent.

5. While Brookline ranks relatively high in the selected list of cities in total costs of her schools, in the opinion of the Survey Committee she is not spending too much. Better distribution of expenses in some directions might be made, yet there should be no curtailment. On the contrary, in some directions, notably

in buildings and equipment, larger expenditures are called for. Brookline can well afford to carry out the conservative building program, and proceed with the organization of the new types of schools, courses and activities recommended in this report. Also she can and should increase the administrative and supervisory forces. The schools of the future will have to put larger portions of their money into administration and supervision than in the past, especially in the school systems that are going to stress attention to individual differences and needs. Brookline could double the amount now spent upon each pupil without placing any greater burden upon her taxable property than is now borne by Springfield, the city occupying the middle position in the list, and her school support could be trebled without causing so great a burden as that which Yonkers is now bearing.

BUILDINGS AND EQUIPMENT.

It has been Brookline's policy to have its primary schools and kindergartens located near the homes of the children. In the fall of 1916 the school department maintained six primary buildings, each for less than 130 children. These six buildings are uniformly old and poorly planned, badly heated and ventilated, dangerous in case of fire, and ill adapted to modern educational requirements. It is the opinion of the Survey Staff that:

1. The children who attend the Newton Street one room school should be transported in the school barges to the Heath School, where they would have superior advantages.

2. The children of the kindergarten and the first three grades in the Chestnut Hill section should continue as now to be transported by barge and trolley to the Heath School, at least until the population of that section increases to such an extent as to furnish a full room of each of these grades.

3. Objections to mode of conveyance be met by use of modern closed, warmed and motor-driven barges, such as the market now affords.

Two of the grammar schools, the Lawrence and the Lincoln, are equally unfit for continued use. The former might be dispensed with or its site used for a new consolidated primary school;

the latter should be replaced by a large public school building of the most approved modern type, located on a site as near the village square as possible, so that the best that the town can supply shall be available for children whose need is greatest. There is no single investment which the town could make more likely to result in improved social conditions than the placing of a socialized modern school in the heart of this most congested portion of Brookline.

The policy of systematic and continuous attention to the upkeep of old buildings is to be commended. All are in a good state of repair.

With two exceptions the janitors employed in the Brookline system give the impression of being competent, diligent and keenly interested in the welfare of the schools under their charge. There is no definite basis for amount of salary or number of assistants. To make a schedule is a difficult problem. Much of the information needed could best be secured by a committee chosen from among the janitors themselves. The total expenditure for janitors' salaries is relatively high, but in considering this fact the decision of the Brookline janitors to ignore the eight-hour law and to put in such hours as prove to be necessary should be given due weight. This report suggests that definite hours of work and specified tasks, together with two or more weeks of paid vacation, be established for all janitors during the summer months.

There are no school districts in Brookline. As a result, class distinctions are more closely marked between Brookline schools than is generally the case between schools of other American communities. Brookline has given its worst buildings to children whose need is greatest. Responsibility for specific conditions is not fixed on definite groups, hence unsatisfactory conditions go unchallenged.

Twenty years ago school buildings were being erected with unilateral lighting, flat roofs, fireproof stairways in separate stair towers, sunken wardrobes, first floor auditoriums, dispensaries, gymnasiums and shower baths. Brookline's newest school buildings fail to measure up to the best modern standards. Old

errors have been copied in new buildings. For specific and detailed criticisms of each school building in Brookline the reader is referred to the text.

It is mistaken economy to go on from year to year without a comprehensive building plan. The school authorities should adopt a systematic, well-thought-out building policy so that new houses shall be erected when they are needed, where they are needed, and according to the most approved modern plans. It is possible to predict movements of population with considerable accuracy, and needs may be outlined for at least a ten-year period.

Certain grammar and primary schools should be replaced by new buildings. The high school is unsuited to permanent use and its plan is such as to preclude the possibility of satisfactory alteration. A Junior High School is needed to provide the best educational environment for pupils above Grade VI, and below Grade X. It is also needed to relieve present congestion in certain grammar schools, and to provide for future increase of enrollment in these grades. Other buildings are in need of repairs and alterations to make them sanitary and safe.

As rapidly as possible Brookline should begin and carry forward the following new building projects, meanwhile rendering such existing buildings as are to be in permanent use both sanitary and safe.

1. A Junior High School on or near the high school campus.
2. A new elementary school to take the place of Sewall, Parsons and Lincoln.
3. A Senior High School in successive sections on the present commanding site.

4. Addition of a third floor to the Manual Training building.

Within ten years all of the above should be accomplished. By reason of her exceptional wealth Brookline can carry out this building program with the minimum of embarrassment. Her widely known aim to give her children the best possible educational advantages, her reputation for progressiveness and her emphatic need of the accommodations here recommended, all argue for prompt and positive action upon this building program.

SCHOOL ENROLLMENT.

1. In November, 1916, there were enrolled in the elementary schools 3080 pupils and in the high schools 704 pupils.

2. The average size of classes in the elementary schools is 30, a number commonly believed to be as large as is consistent with efficiency of instruction.

3. Of 70 Massachusetts towns Brookline is one of eight having the lowest per cent of attendance. The schools having the poorest records are attended by the children of the more intelligent and well-to-do parents.

4. Of 32 cities compared Brookline has the largest percentage of over-age pupils in its elementary schools. In other words, if they remain in school a larger number will complete their elementary education at an age greater than the normal than in any other of these cities.*

5. A school system cannot be said to be doing its duty to society unless it adapts its organization of classes and its Course of Study to meet the needs of the large class of over-age children. This over-age condition in the Brookline schools is inconsistent with their reputation and hampering to their usefulness. Both the parents and the schools are responsible; the parents for late entrance and irregular attendance of pupils, and the schools for the superfluous ninth grade, for mass promotion, and the short school day.

6. At least as much emphasis should be placed upon the rapid advancement of capable individuals beyond grade as to keeping laggards up to grade. To meet the situation presented by the data of this chapter relating to age and progress the Survey Committee recommends that classes be organized as far as possible according to the ability of pupils; that special classes

* The holding power of the schools is shown by the fact that but three pupils left to go to work at 14, while but three left to go to work lower than the seventh grade. Notwithstanding the fact that many pupils are over-age, those whose circumstances compel them to seek employment reach higher grades than pupils similarly circumstanced in most cities. This speaks well for the interest in their pupils and the power to win and hold them exemplified in the teaching force.

be formed for backward pupils; that additional unassigned teachers be provided; that a central Junior High School be organized to comprise all classes of Grades VII, VIII, IX, and X, to be entered normally between the ages of 12 and 13 and to be completed in three years, through dropping out the present ninth grade; organization of program to permit due flexibility in courses and rapid advancement on the part of the more capable, and that the Senior High School, with a course of three years, be entered normally at 15 and completed at 18.

THE ATTENDANCE OFFICE.

1. Taking into account the limitations under which the attendance work is performed it is well done, but the attendance officer needs his whole time for the work. The duties connected with the stock room and the delivery of supplies to schools now required of him should be transferred to the clerk having charge of school property.

2. A continuing census should be instituted and kept up to date by the attendance officer with the assistance of principals and teachers.

3. The school attendance office should be developed so that it may render service as a vocational guidance bureau.

RECORDS AND REPORTS.

1. There is a striking lack of records in the Brookline school system. By no means enough information about the elementary schools, the high school and School of Practical Arts and their pupils is being recorded, systematically accumulated and periodically analyzed and reported in statistical form.

2. The financial accounting is accurate but crude and inadequate, and of little value in determining the efficiencies of costs.

3. The budget system needs to be reorganized in order to make it an efficient instrument for intelligent control.

4. Records in the field of equipment and supplies are as indefinite as in the other fields.

5. The following pupil records are needed: (a) Permanent record of quality of work, (b) progress of pupils through the grades, (c) failure in each study, (d) withdrawal from school, (e) location of each child of school age in school, public or private.

6. The accounting system should be reorganized so as to permit a distribution of expenses in accordance with the classification of the national office of education.

7. The budget and the monthly and annual financial reports should be revised so as to be in accord with the national system of school accounting.

HEALTH ENVIRONMENT AND PHYSICAL TRAINING.

1. The pupils in upper grammar grades need play fields, gymnasiums and baths as an adequate environment for activity. In several instances play fields are lacking and in others they are so far from the school buildings as to diminish their value.

2. All of the grammar school gymnasiums are inadequate from the modern standpoint. The ceilings are too low, many of them are too small and the play space is encroached upon by the presence of posts.

3. The high school classes use the Brookline Public Gymnasium. The gymnasium for girls is reached by climbing three flights of stairs. It is not completely equipped. The showers are badly placed and consequently are little used.

The gymnasium used by the boys is large and well equipped, but the bathing facilities are poor. The joint use of the gymnasium by the school and the public presents for the school schedule-making difficulties which limit the use made of the plant.

4. The classroom schedule should be arranged to permit each child in the upper grammar grades and the high school to have in addition to the recess 40 minutes for vigorous exercise twice each week, with 20 additional minutes allowed for bathing. The schedule for the lower grades should arrange for the recess period, for two 30-minute periods of gymnastics or play per week and for three daily periods of exercise of four minutes each.

5. In the high school, physical examinations proceed so

slowly in the opening weeks of school that much time is lost in the physical training work by a late start. The physical examinations should be better organized.

6. Both in the elementary schools and the high schools the physical examination records are inadequate. Careful records should be kept and they should be made available both to the regular teachers and the physical training teachers in whose classes these pupils are working.

7. Much excellent work has been done under poor administrative conditions. The work accomplished in corrective gymnastics deserves special commendation. This section of the work in the elementary schools should be increased.

8. The joint use of the public gymnasium and baths by adults and school pupils under separate control results necessarily in some lack of correlation. Brookline's ultimate high school should have its own gymnasiums and baths.

9. The recommendations of this report call for a little more than twice the present instruction in physical training. The fact that Brookline is now doing as well as many other communities in this field does not remove from the Survey Committee the obligation of pointing out the best modern standards in making provision for the physical needs of youth.

HEALTH WORK.

1. *Classroom Visits.* Weekly room inspections should be placed in the hands of the teacher or nurse. If any child needs the doctor a special call should be sent in to him.

2. *Yearly Examinations.* (a) Each inspector should have a definite idea of what he is expected to look for. (b) He should clearly understand the degree of defectiveness which demands (1) that it be entered on the card; and (2) that parents be notified. (c) He should know exactly what the terms used by every other inspector mean. (d) He should be required to enter all results of examinations on the individual pupil health cards instead of in blank books or on loose sheets of paper. (e) He should be required to give regular written reports on examinations made, defects found and defects remedied. (f) These reports should be

regularly compared in staff conference so that each inspector may gain a clear understanding of what other members of the staff are doing. (g) A detailed report of work accomplished should be part of the printed record issued annually by the School Committee.

3. *Follow-up Work.* (a) A system of follow-up work should be established in order to insure treatment of defects found. Such a system should include "return cards" from parents, interviews with parents, and home visits by nurses. (b) Work of physicians should be judged by the proportion of defects discovered which receive treatment.

4. *Preventive Work.* Definite and uniform policies should be adopted providing for health instruction for pupils, health conferences with teachers, systematic calling of parent conferences, talks with individual parents, inspection of hygienic conditions in school buildings, and health classes for janitors. Health education should be made the most important part of the medical inspector's work.

5. *Dispensaries.* Dispensaries for doctors and nurses should be fitted up in every school building except the Devotion grammar. Medical inspection cannot be effective without adequate facilities for carrying on the work.

6. *Sight and Hearing.* (a) Physicians should co-operate in helping teachers to give tests of vision and hearing, and in securing treatment for those children who need it. (b) Classrooms with special lighting and seating facilities, and teachers with special training, should be provided for the 90 children discovered in Brookline with seriously defective vision.

7. *Fresh Air Class.* If fresh air classes are to be maintained they must provide pure air, opportunity for outdoor sleep and an abundance of hot food. The class at the Parsons School is neglected. It should either receive scientific attention or be abolished. We suggest that in the new elementary school building recommended to take the place of the Sewall, Parsons and Lincoln Schools, plans be made to maintain a real open air class for anemic children, under close medical supervision.

8. *Physical Training Department.* Closer co-operation should

exist between the Physical Training and the Medical Inspection Departments. At present each is handicapped by lack of assistance from the other. Medical inspectors should stimulate, encourage and advise the Physical Training Department to further the health campaign by special training for varying groups of physically defective children.

9. *Clinics.* (a) In sending children to the dental clinic we urge that work be started with first-grade pupils and extended upward if time permits. As first grades are promoted they should be followed up so that eventually all children will have received dental care from their first days in school. The plan should be to concentrate effort on children whose teeth are still sound; to prevent rather than attempt to cure. (b) Eye, ear-nose-throat, and orthopedic clinics should either be established in Brookline, or else arrangement should be made by the town to secure clinical privileges for Brookline children in neighboring cities.

10. *School Feeding.* If the one-session plan is adhered to, a system of school lunches should be established, under the direction of a skilled dietitian. Cooking should be done at a central kitchen, and food distributed by automobile to the different school buildings. School lunches should neither be made a matter of charity nor a commercial proposition, but should be regarded as an important educational activity.

11. *Reorganization.* Reorganization of the Medical Inspection Department is an essential step in the effort to increase efficiency. Changes must be made along four lines: Increased funds, more nurses, fewer doctors, leadership. (a) The question of a larger budget for health work in the Brookline schools has already been under discussion. No effective organization can be secured until more money is available. Physicians should not be asked to give their services at the low rate of compensation now offered; and if adequate services are to be secured the town must offer salaries large enough to attract competent people. Medical inspection has now outgrown the charity stage of development. (b) The number of school nurses should be increased. At least two more are needed on the force. The State law is somewhat obscure upon the question of employing nurses for school service,

but it is almost certainly true that legal means may readily be found whereby Brookline may increase her number of school nurses. The intent of the Massachusetts law is to encourage, not to discourage, the employment of nurses to carry on public health work. This matter is so important that steps should be taken at once towards making the necessary arrangements for adding at least two registered nurses with school experience to the staff. No other investment of public money will yield so rich a return in improved health conditions. (c) Brookline should certainly reduce the number of inspectors and increase the time required of each one. No one can do effective work at a task on which he spends only 108 hours a year, scattered over a period of nine months. There should be at least one physician in Brookline to whom the health of school children is the biggest and most important problem he faces. Medical inspection should be his chief professional interest. (d) Unless there is some one in the Brookline system to whom educational health service is a personal and vitally important matter there can be little effective co-operation within the staff. Three hundred dollars' worth of skilled leadership does not stretch very far; nor has Brookline the right to expect that services will be given free. It is true in medical inspection as in the administration of schools that the man at the head sets the pace and decides the quality of the work which his followers do.

As a tentative plan of reorganization, the following scheme is presented for consideration: 1. Increase the medical inspection budget to \$1 for every child. 2. Secure the services of two additional school nurses. 3. Secure one skilled physician whose specialty is educational health work, to give full time, and assume supervision of all health activities. 4. Several of the physicians on the present staff have specialized in certain lines of medical work. Their experience should be available for Brookline children. Arrangements should be made so that the medical inspector may refer pupils to specialists for examination whenever need arises.

These suggestions imply a complete and radical reorganization of the entire medical inspection work. They will probably

meet with opposition. Other plans will be suggested, and these should receive full consideration. The exact method to follow in reorganization is difficult to decide, but the fact that reorganization of some sort must take place stands out so clearly that it cannot be successfully challenged.

KINDERGARTENS.

1. In all of the kindergartens except the one in the Manual Training building unusually generous provision has been made for the comfort and health of the pupils. The only handicap in evidence is the lack of special toilets and lavatories for the exclusive use of kindergarten pupils.

2. The small attendance in some kindergarten rooms suggests the need of some adjustment of district lines that shall result in a more even balance in kindergarten enrollment. At the Driscoll School one of the two large rooms now devoted to the kindergarten might easily be spared temporarily for the use of a primary grade.

Brookline is exceptionally generous, not only in the number of kindergartens provided but also in the number of teachers and helpers assigned to each kindergarten. There is some danger lest those in charge give more help than is consistent with the initiative and independence which the teachers evidently wish to cultivate in the children.

3. Except in the Pierce School the kindergarten sessions begin 30 minutes later than the grade school sessions. There would be some advantage in having kindergartens and primary schools begin at the same time.

4. The kindergarten system and work are of the well-known traditional type. A school system that affords its teachers a wide freedom for experimentation may well carry out a much more progressive and flexible program than is now found in the Brookline kindergartens. The teachers should hold program meetings of their own. Brookline's kindergartens should bear the Brookline stamp.

5. The kindergartens are equipped with the most approved modern appliances, but these appliances are used for the most

part in the traditional way. Weaving, which is one of the Brookline kindergarten occupations, is of questionable value. The same may be said of Sewing.

6. The teachers are cultivated, well-educated women, skillful and sympathetic in their management of children. The teachers in one kindergarten know very little, however, about what is being done in the other kindergartens of the town. This tends toward an undesirable isolation which should be remedied by frequent meetings in which program-making, methods of instruction and ends to be achieved would be subjects for discussion.

THE COMMON BRANCHES.

1. The Course of Study prescribes limits similar to those set in elementary schools generally. Much of the teaching observed was of a high order of excellence; all of it compares very favorably with that which one sees in visiting the best schools elsewhere. The chief thing which impressed the Survey Staff as lacking was a common aim and common standards of achievement. This could be remedied by outlining more definitely each subject in the Course of Study. Much would be gained by taking up in teachers' meetings the preparation of a more or less detailed syllabus for each subject.

2. Among the facts brought out by the "Standard Tests" are the following:

There is no marked tendency in the results as a whole to fall above or below the standards which have been chosen for comparison. In the Courtis tests in the four fundamental operations in arithmetic the Brookline schools do not come up to the standards of either speed or accuracy except in the division examples. On the other hand, in the Stone test in reasoning Brookline medians are well above some of the standards and are equal to practically all.

In the writing tests Brookline results are very close to the standards in regard to speed, but fall behind in regard to quality. The falling off is particularly noticeable in the seventh and eighth grades.

The results in the reading tests show much the same condi-

tion. In speed, Brookline medians are approximately equal to the standards, but they are somewhat behind in the quality of the reproduction of the passage read. It should be said, however, that the differences in the latter test are very slight.

It is in the tests of Composition and Spelling that Brookline makes the best record. In the latter test, especially, the Brookline results are far above any of the standards.

One of the most striking facts brought out by the study is that there is a large amount of variation in the system. Differences in attainment are large and frequent, not only between the several schools, but also between sections of the same grade in the same school. The variations within grades are sometimes greater than they are between successive grades.

Variations such as these are not necessarily a mark of poor organization in a system. They may be brought about by natural differences in school populations or by the definite administrative policy of separating the pupils into groups according to their abilities. There is, however, no evidence that either of these causes operates to produce the variations found in the Brookline schools.

It is rather interesting that, in spite of the large inter-school differences, there is no school which stands out above the others, nor is there one which uniformly occupies a position decidedly lower than the rest.

There seems to be a slight indication of a falling off of the work in the upper grades. The evidence for this is by no means conclusive, for not all the tests were given in all the grades, and there are no data at all concerning the ninth grade work. A series of tests running through the ninth grade would furnish material for further study of this interesting problem.

Suggestions. The bearing of these findings on the solution of the problems in the Brookline schools is necessarily most significant to the teachers and supervisory officials who are conversant with the conditions in the system. We venture, however, to make the following general suggestions:

1. A pressing need exists for the determination of the desirability of the adoption of common standards of practice and at-

tainment which would tend to do away with the large variations found at present in the system.

2. If it is found that the differences are not caused by conditions which cannot or should not be changed, tentative standards in each subject should be formulated for the Brookline schools.

3. Less emphasis should be placed on the teaching of Spelling, and more attention should be given to the study of Arithmetic. Steps should also be taken to improve the quality of the handwriting.

4. In schools where there are two or more sections to a grade the uniform practice of separating the pupils according to their abilities should be established.

DRAWING AND HANDWORK.

1. The close relation between Drawing and Handwork is recognized in the fact that they are outlined together.

2. The aim of the Drawing seems to be well balanced.

3. There are opportunities for more correlation than is found in practice or than is likely to occur without additional supervision.

4. The Handwork is meager in material and content. A course rich in content and broad in scope of materials is desirable, so that by means of projects dealing with food, clothing, shelter and transportation it may assist in interpreting to the child the simple facts and meaning of the life surrounding him.

5. Supervision of Handwork and Drawing might be provided for in one properly trained person, who would represent both departments, as an assistant supervisor.

DRAWING IN THE GRAMMAR GRADES.

1. Within the limitations under which the work is carried out, it is creditable, but correlation with other school activities, such as Manual Training, Sewing and Domestic Science, would add values to Drawing that cannot be realized at present.

2. In the upper grades, Drawing could be taught to best advantage by a special teacher. The Junior High School organization would provide suitable studios and special teachers.

3. The supervision of primary and grammar school Drawing should be considered as a common problem.

MANUAL TRAINING IN GRADES V TO IX.

1. Manual Training in Brookline varies as to the grades in which it is taught in different schools, the length of periods for the same grades in different schools, and the varying courses used by the teachers.

2. The materials and processes employed in the Manual Training are too limited in scope, and in the interests they can develop, to reflect as they should the significant activities of the large metropolitan center of which Brookline is a part.

3. Additional equipment required to broaden the scope of the work would not be expensive.

4. A competent supervisor should be employed who might direct the manual and technical work of the school system.

5. This work in the seventh, eighth and ninth years could be most adequately developed in a Junior High School organization.

GRADES VIII AND IX.

1. To gain promotion to the high school in Brookline, pupils not only must complete the ninth grade, securing the diploma, but must also secure the "certificate to high school." Thus many pupils who would be admitted to the high school of any other school system are here excluded. It is recommended that the "certificate to high school" be abolished, or else that it operate to exclude only from the college preparatory courses in the high school.

2. There is great unevenness in the size of classes in Grades VIII and IX in different schools. Some reorganization should be attempted to reduce the present disparity.

3. Elimination of pupils from school in the upper grades, quite noticeable in seventh and eighth, is most marked in the ninth grade. Some form of reorganization should be attempted to so mediate the passage from Grade VII to high school as to prolong the schooling of a greater proportion of pupils than now survive Grade IX.

4. Pupils in the Brookline school system on completing the elementary school course are in at least half of the cases one year or more older than the "normal age" for completing the elementary school course in the United States. As the 15 and 16-year-old pupils of the Brookline ninth grade are plainly of "high school age," such upper grade reorganization should be effected as will place these pupils in a situation more nearly resembling high school conditions.

5. Brookline's policy of giving to pupils of Grades VIII and IX choice among the three courses offered is commended. Since, however, no single school offers all three of the courses and since there appears to be little or no transferring of pupils from one school to another to get educational experiences not available in the pupil's local school, one of the chief merits of the plan, the "prevocational try-out" feature, is practically eliminated. Here, again, some reorganization should be attempted which would really open choice of all possibilities to every pupil.

6. The collection of all eighth and ninth or seventh, eighth and ninth grade classes into a single center would afford opportunity for administering the differentiation of courses in the most effective manner; would make further differentiation possible without added expense; would enable those in charge to equalize the size of classes; would so mediate the passage of pupils from Grade VII to high school as to reduce elimination; and would bring all pupils of "high school age" under high school conditions.

To accomplish these ends the Survey Staff recommends that such a collection of upper grade classes in a single center be made.

7. Grade IX is costly and it is unnecessary. It is rapidly disappearing from its only former stronghold, the New England States. It might be considered a worthy extension of public school opportunities if Brookline possessed no high school, but Brookline has a high school and a School of Practical Arts, and it can without added expense have a very valuable new school capable of being administered in such a way as to add greatly to the educational advantages now open to Brookline children while saving a year of their time.

This new school, already widely adopted throughout the

United States, embraces three intermediate grades of a 12 grade system, and is known as the Junior High School. Below it are six grades known as the Elementary School, and above it are the three grades known as the Senior High School.

The Survey Committee recommends that Brookline drop the ninth grade and adopt that form of the 12-grade organization known as the Six-Three-Three, or Junior High School plan.

9. In view of Brookline's increasing population, the high school will soon be filled to its capacity with the last three grades only; and unless Brookline's experience in the next 10 years is altogether different from that of practically all other progressive cities, she is certain, if she introduces the Junior High School unit, to see her school grades from the seventh grade up increase in enrollment at a much more rapid rate than they have heretofore increased, and also at a more rapid rate than the population increases.

10. In view of the foregoing, the Survey Committee recommends that early steps be taken to secure land in the vicinity of the high school and the School of Practical Arts, and that the School Committee erect thereon the best type of modern school for intermediate grades that architects have developed; and that by such gradual steps as will be least disturbing to the system as a whole the grades above the sixth, including the ninth till eliminated, together with the present high school first-year class, be housed therein; that later, as recommended in the chapter on buildings, but before the high school again becomes overcrowded with its three grades, plans be drawn for a high school building such as Brookline should have, and that it be erected in two successive sections, utilizing the present commanding site and additional ground at the rear.

THE HIGH SCHOOL.

Brookline has made commendable progress in expanding the high school program of studies to meet new social needs manifest in the community. There is, however, an extensive elimination of the over-normal-aged pupils as the entrants pass up through the high school grades, which might be so reduced, if the reorganiza-

tion recommended in this report is effected, so as to give Brookline an altogether unique rank among cities in holding pupils to high school graduation. Some modification of courses as recommended in this report would, it is believed, add to the holding power of the school. All curricula except those specifically vocational should be regarded as suggestions rather than prescriptions and administered in no rigid and inflexible manner, but with full regard to the continuous readjustment of educational means to the developing and changing needs of adolescence.

The school is handicapped both in building and equipment. The deficiencies in equipment pointed out in this report should be remedied, but it is recommended that no further expense be incurred in remodeling the building.

The organization and management of the high school are, on the whole, good. Some improvements are, however, suggested. Among these are more frequent faculty conferences, a clearer understanding of the function of a head of department, more co-operation among departments, more uniform allotment of pupils per teacher, elimination of over-small and over-large classes, and a more democratic grouping of pupils into recitation sections. This report commends the co-educational plan in vogue in the Brookline High School, and it recommends the official recognition of the most suitable woman member of the faculty as Dean of Girls. The discipline of the school deserves high commendation. In personality, in preparation for their work and in practical skill, the faculty of the school appear distinctly superior to the average city high school faculty. The enlightened policy of the School Committee which leaves the Superintendent free to use his best judgment in this most delicate task of selecting teachers is worthy of note at this point.

THE SCHOOL OF PRACTICAL ARTS.

1. The aim of the school is commendable, but the school reaches only a small number of the children it should serve. Being unrelated to the grammar school or the high school, it is hindered in attempts to increase enrollment. The stigma of inferiority also hinders the increase of enrollment. The school

should be organized as an essential part of the school system, rather than as a separate institution.

2. A study of the occupations of citizens and parents of school children indicates:

(a) The occupations of Brookline residents are varied.

(b) The population changes.

(c) Brookline residents are employed largely in the metropolitan district rather than in the town itself.

(d) About 45 per cent of the parents of children in the seventh, eighth and ninth grades are foreign born.

3. The range of activities given in the school is too limited to afford adequate try-out experience. The varied occupations of the residents of Brookline, and the wide range of vocations the children expect to enter call attention to the need for a reasonable range of courses in the grammar and high school.

4. As many of the children cannot take full advantage of the present school system because of the emphasis on preparation for higher institutions, very practical courses should be offered, beginning with the seventh grade and extending through the high school.

5. These practical courses should offer a try-out experience in a series of the important activities listed in the tables. This experience should be offered to all children who may elect the Practical Arts course. The exercise type of work given at present to high school pupils should not be given to Practical Arts pupils.

6. For the children who desire special training in certain important vocations, industrial training courses should be organized to follow the try-out experiences. A continuation of the Practical Arts course from the special training stage should be in the form of a technical course. These courses are shown in relation in a diagram on page 399.

7. The arrangement of rooms and equipment (see page 387) does not make for the best possible use of the plant. The preference in use of rooms and equipment accorded to the high school hampers the development of the work in Practical Arts.

8. To offer special courses and to provide suitable equipment for them, it would be necessary to center all seventh, eighth and ninth grade work in one plant. Such a building properly equipped

would be known as a Junior High School. The present Senior High School would, as now, include the Manual Training High School and would continue the Practical Arts work of the tenth, eleventh and twelfth years.

9. The School of Practical Arts would be absorbed as an important course in the Junior and Senior High Schools, instead of remaining an isolated institution with a three-year course. The equipment of the present Manual Training High School would be available for all of the industrial and technical training and for try-out experiences until the capacity of the plant is fully used. When additional shop capacity is required, a third story might be added or else elementary shops with inexpensive equipment should be provided in the Junior High School for the try-out experiences.

A DEMONSTRATION SCHOOL FOR BROOKLINE.

As a result of an educational survey, something of a practical nature should follow not only in the matter of buildings, organization and general directions as to educational policy, but in addition something that would afford a continuous opportunity to test and demonstrate the best things capable of being done in the town of Brookline itself.

Other cities, Detroit and Boston, for instance, and a number of smaller cities have established departments of reference and research which deal *extensively* with the particular school system as a whole. A demonstration school would deal *intensively* with a problem under controlled conditions. The results in Boston and Detroit are published, and to a certain extent Brookline can share the benefit of their findings. But this is not enough. There are certain problems that Detroit's efficiency office and Boston's efficiency office cannot solve for Brookline. These problems must be solved *by* Brookline and *in* Brookline. There are other problems which no school system has yet undertaken to solve. Here lies Brookline's opportunity, not only to benefit her own schools, but, through publication of results to make a unique contribution to the cause of public education. Her wealth and her standing among progressive American communities lead one to expect from her some noteworthy contribution to the general welfare.

CHAPTER I.

THE BROOKLINE COMMUNITY.

In order to answer the question, What kind of a school system should Brookline have? it is necessary to ascertain as definitely and precisely as possible all the facts that can readily be gathered regarding Brookline — its people, their occupations, their wealth, the opportunities open to their children and whatever else of a social, economic or other nature that will throw light on the question.

From whatever angle one considers the people and the life of Brookline, its close relations with the city of Boston are ever prominent. Its life is in many respects a part of the metropolitan life. The closeness and intimacy of the two are represented physically by the indistinguishableness of the boundary lines; several miles of them are in the middle of populated blocks. The men have their business or their industry in the city and their residence in the town because of the superior advantages afforded as regards health, beauty, morals, and social contact. This is true of the people with means and culture. People of less wealth have been attracted by opportunities to work upon estates, upon the street car line that has a terminal in the town, and in the homes of the more well to do.

In studying the social and economic situation of any city in an attempt to ascertain the conditions which limit and circumscribe and determine the organization and operation of the schools we find it advantageous to compare with it other municipalities on the assumption that there are many common situations and experiences in each and all and that we are better able to understand each better in the light of all the others. For purposes of comparison we have chosen two groups of cities. The first is composed of all the 51 cities in the United States including Brookline which had a population in 1910 of 25,000

or over and less than 31,000. This group furnishes a general measure, nation wide, with which Brookline is most closely comparable. This group of cities is given here together with their population.

TABLE NO. 1.

ALL CITIES BETWEEN 25,000 AND 31,000
POPULATION IN 1910.

	<i>Population</i> <i>1910</i>		<i>Population</i> <i>1910</i>
1. Mt. Vernon, N. Y. . . .	30,919	27. Newport, R. I.	27,149
2. Lima, Ohio.	30,508	28. Watertown, N. Y.	26,730
3. Niagara Falls, N. Y. . .	30,445	29. Waterloo, Ia.	26,693
4. LaCrosse, Wis.	30,417	30. Warwick Town, R. I. . .	26,629
5. Newport, Ky.	30,309	31. Waco, Tex.	26,425
6. Pasadena, Cal.	30,291	32. Sheboygan, Wis.	26,398
7. Austin, Tex.	29,860	33. Columbia, S. C.	26,319
8. Aurora, Ill.	29,807	34. South Omaha, Neb. . . .	26,259
9. Orange, N. J.	29,630	35. Lewiston, Me.	26,247
10. Lynchburg, Va.	29,494	36. Nashua, N. H.	26,005
11. Council Bluffs, Ia. . . .	29,292	37. Elgin, Ill.	25,976
12. Colorado Springs, Colo.	29,078	38. Kingston, N. Y.	25,908
13. San Jose, Cal.	28,946	39. Shenandoah (Boro.), Pa.	25,774
14. Lorain, Ohio.	28,883	40. Bloomington, Ill.	25,768
15. New Rochelle, N. Y. . .	28,867	41. Wilmington, N. C. . . .	25,748
16. Easton, Pa.	28,523	42. Ogden, Vt.	25,580
17. Norwich (Town), Conn.	28,219	43. Clinton, Ia.	25,557
18. Zanesville, Ohio.	28,026	44. Madison, Wis.	25,531
19. Shreveport, La.	28,015	45. Hazleton, Pa.	25,452
20. Poughkeepsie, N. Y. . .	27,936	46. Newark, Ohio.	25,404
21. Norristown (Boro.), Pa.	27,875	47. Chicopee, Mass.	25,401
22. Danville, Ill.	27,871	48. Muskogee, Okla.	25,278
23. Waltham, Mass.	27,834	49. Battle Creek, Mich. . . .	25,267
24. Newburgh, N. Y.	27,805	50. Green Bay, Wis.	25,236
25. <i>Brookline, Mass.</i>	<i>27,792</i>	51. Stamford (City), Conn.	25,138
26. Meriden (City), Conn.	27,265		

The second group is composed of the cities most like Brookline as regards wealth, intelligence, proximity to urban centers, number of commercial and industrial establishments, and reputation of schools—17 cities in all. This group provides a comparative measure for Brookline which is superior to the former

group in that the cities contained in it are of more nearly identical condition. Two larger cities have been included in the form of an addendum — Boston because of its proximity and the close relations existing between it and Brookline; and Los Angeles, because of its many points of resemblance in the point of wealth, intelligence, social composition, and cost of schools. The cities in the second group and the population of each are as follows:

TABLE NO. 2.
SPECIAL GROUP OF 17 SELECTED CITIES
AND THEIR POPULATION IN 1910.

<i>Population</i> 1910		<i>Population</i> 1910	
1. Springfield, Mass.	88,926	11. Madison, Wis.	25,531
2. Yonkers, N. Y.	79,803	12. Evanston, Ill.	24,978
3. Berkeley, Cal.	40,434	13. Montclair, N. J.	21,550
4. Newton, Mass.	39,806	14. Oak Park, Ill.	19,444
5. San Diego, Cal.	39,578	15. White Plains, N. Y. . . .	15,949
6. East Orange, N. J. . . .	34,371	16. Milton, Mass.	7,924
7. Pasadena, Cal.	30,291	17. Wellesley, Mass.	5,413
8. Colorado Springs, Colo. .	29,078		
9. New Rochelle, N. Y. . . .	28,867	Boston, Mass.	670,585
10. Brookline, Mass.	27,792	Los Angeles, Cal.	319,198

NATIVITY OF THE POPULATION.

The population of Brookline is not so distinctly American in stock as the reputation of the town for wealth and culture would indicate. Thirty per cent of its population, according to the census of 1910, are foreign born; of the 51 cities in the national group but 10 have a larger proportion of such nativity. This large proportion of foreign birth is even more conspicuous in the selected group of cities; New Rochelle and Yonkers alone have larger proportions. This excess of foreign born is offset in part by smaller percentages of native born of foreign or mixed parentage and also of negroes. Thirty of the 51 cities in the first group and 11 of the 17 in the second group have a larger proportion of native born of foreign parents, while 32 of the first group and 10 of the second group have a larger proportion of negroes. In its proportion of native born of native parents Brookline is near

the mean in both groups, the twenty-eighth city in the national and eighth city in the selected group. The tables presenting the detailed facts for the former group from which these deductions are drawn are given in the appendix, Table 1; the table for the latter group is presented herewith:

TABLE NO. 3.
NATIVITY OF THE POPULATION OF 17
SELECTED CITIES.

<i>Cities</i>	—Native White—		<i>Foreign Born White</i>	<i>Negro</i>
	<i>Native Parentage</i>	<i>Foreign or Mixed Parentage</i>		
1. Yonkers.....	27.1	37.5	33.3	1.9
2. New Rochelle.....	29.7	34.1	20.1	6.1
3. <i>Brookline</i>	41.8	27.3	30.0	0.8
4. Wellesley.....	41.3	29.3	28.8	0.5
5. Newton.....	40.9	29.7	28.1	1.2
6. Milton.....	42.2	29.6	27.6	0.5
7. Springfield.....	40.2	32.2	25.9	1.7
8. Montclair.....	41.6	22.9	23.8	11.5
9. Evanston, Ill.....	40.7	31.7	22.8	4.7
10. Berkeley, Cal.....	48.2	29.3	18.9	0.6
11. San Diego.....	57.0	21.6	18.6	1.5
12. Oak Park.....	48.7	33.6	17.1	0.6
13. East Orange.....	53.1	24.7	16.5	5.5
14. White Plains.....	42.5	40.2	16.3	0.6
15. Madison, Wis.....	42.6	40.3	16.3	0.6
16. Pasadena.....	62.8	19.4	14.2	2.5
17. Colorado Springs, Col.....	67.4	18.4	10.3	3.8
Boston.....	23.5	38.3	35.9	2.0
Los Angeles.....	53.2	23.4	19.0	2.4
United States — Urban...	41.9	29.0	22.6	6.3
Cities 25,000-100,000.....	45.9	26.5	20.2	7.3
New England — Urban...	23.9	34.2	30.7	1.1
Cities 25,000-100,000.....	30.5	35.2	33.3	1.0

When compared with New England standards, however, Brookline is observed to be more distinctly American. Of the 20 cities in Massachusetts having in 1910 a population of from 25,000 to 100,000 only Haverhill and Pittsfield have a larger

proportion of native whites born of native parents. Then, too, the percentage of foreign born decreased two per cent in Brookline during the decade 1900-1910, while in Massachusetts it increased 1.3 per cent. The American stock in Brookline, moreover, increased during the decade 1900-1910, while in Massachusetts as a whole it decreased. It is evident that the immigration of foreigners into New England has not invaded Brookline to so great an extent as the typical New England city.

An analysis of the foreign-born population reveals a more favorable situation than exists in most cities. But three per cent of its foreign born are from eastern and southern Europe as opposed to 20 per cent for New England and about 25 per cent for the United States. Approximately five-sixths of this group of its population are from English-speaking nationalities.

TABLE NO. 4.

TABLE NO. 4. FOREIGN-BORN POPULATION OF
BROOKLINE BY COUNTRY OF BIRTH.

Total foreign born.....	8,401	Hungary.....	6
Austria.....	21	Ireland.....	4,203
Canada, French..	71	Italy.....	43
Canada, other.....	2,047	Netherlands.....	10
English, Scotch and Welsh..	830	Norway, Sweden, Denmark.	527
France.....	38	Russia and Finland.....	131
Germany.....	296	Turkey.....	29
Greece.....	36	All other countries.....	113

The Children: Turning next to those of school age we find that 10 per cent of the population from six to 20 years are of foreign birth. The per cent (47) that are native born of foreign or mixed parentage is greater than those of native parentage, 42 per cent.

TABLE NO. 5.

NUMBER AND PER CENT OF POPULATION SIX TO 20 YEARS
OF AGE IN BROOKLINE IN 1910, BY NATIVITY,
COMPARED WITH URBAN UNITED STATES AND NEW
ENGLAND, UNITED STATES CENSUS, 1910.
(Abstract — Pages 229 and 233.)

	BROOKLINE		<i>Per Cent for Urban United States</i>	<i>Per Cent for Urban New England</i>
	<i>No.</i>	<i>Per Cent</i>		
All classes.....	5,766	....	...	...
Native white — native parentage	2,452	42.4	49.0	0.33
Native white — foreign or mixed parentage.....	2,709	47.2	39.0	0.51
Foreign born white.....	583	10.0	7.0	0.16
Negroes.....	21	0.4	5.0	0.1

When comparison is made with the percentages of all cities in the United States it is seen that the school population of Brookline has 10 per cent more children of foreign birth or whose parents, one or both, are of foreign birth than cities as a whole. But again, when comparison is made with cities in New England, Brookline makes a more favorable showing as regards per cent of native American stock by as much as nine per cent.

LARGE PROPORTION OF FEMALES.

One of the striking things about the people of Brookline is the large number of females in proportion to the number of males. Of the 27,792 people in the town in 1910, 16,754 were women or girls — a proportion of only 65.9 males to 100 females. This is the smallest of all cities of from 25,000 to 31,000 population in the United States and also of all cities in the selective group. Wellesley is the nearest city, with a proportion of 74.4, but there is none other less than 80 in the two groups. The United States urban standard is 101.7, while that for New England urban is 97.8. This marked deficiency in males does not obtain, however, with those of school age. The school census, five to 15 years inclusive, for 1915 shows 2226 boys, 2263 girls, a proportion of 98.4. Another interesting feature is the very large

per cent of unmarried females — 53.9; again a larger per cent than in either of the groups of cities chosen for comparison. The nearest city is Newton, with 46.1 per cent, but none other is higher than 40. The United States urban standard is 32.8. (*Note:* Abstract Census 1910, pages 104 and 105.)

SMALL PROPORTION OF CHILDREN.

No less striking is the small number of children. Brookline is again at the extreme. No other city in either group has so small a percentage of its total population between the ages of five and 14, inclusive, or below 15 years of age. Some cities have almost twice as large a proportion as Brookline which are 12.9 and 19.3 per cent respectively. (See appendix, Tables 2 and 3.)

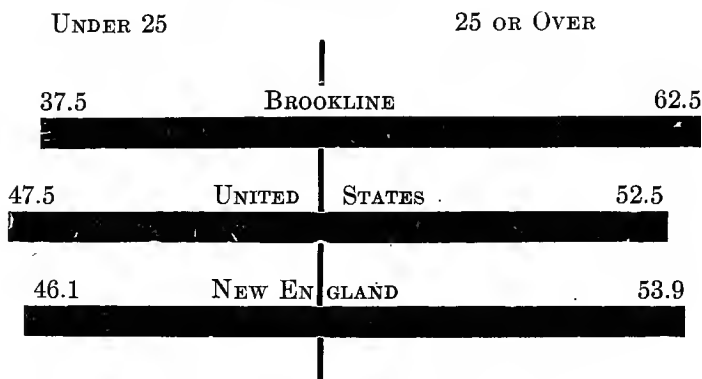
It is a town in which the number of people below 25 is small and the number above 25 is large as compared with cities in general in the United States. The deficiency among those below 15 is eight in 100 and below 25, 10 in 100. On the other hand, out of 100 people there are four more between the ages of 25 and 44, and four more between 45 and 64, and two more above 65 than are generally found in cities. When compared with New England cities the same deficiency below 15 is found, although in other respects the deviation from the norm is less except in the case of those from 25 to 44 years of age.

TABLE NO. 6.

PERCENTAGE OF POPULATION ACCORDING TO AGE IN BROOKLINE, UNITED STATES AND NEW ENGLAND URBAN COMMUNITIES.

	<i>Under 5</i>	<i>Between 5 and 14</i>	<i>Between 15 and 24</i>	<i>Between 25 and 44</i>	<i>Between 45 and 64</i>	<i>65 and over</i>
<i>Brookline. . .</i>	6.4	12.9	18.2	37.0	19.6	5.8
<i>United States</i>	9.9	17.4	20.1	33.2	15.2	4.0
<i>New England</i>	9.9	17.4	18.8	32.3	16.5	5.1

PERCENTAGE OF POPULATION UNDER 25 AND 25 AND OVER
IN BROOKLINE, COMPARED WITH LIKE PERCENTAGES
FOR THE UNITED STATES AND
NEW ENGLAND.



SUPERIOR INTELLIGENCE OF PEOPLE.

That the people of Brookline are unusually intelligent is evident from two sets of facts. It has the lowest per cent of illiteracy among its foreign born of all cities in the United States above 25,000 population, and there are only three cities which have a lower per cent for all classes in the population, Battle Creek, Mich., Dubuque, Ia., and Colorado Springs, Colo. The figures for Brookline and for urban United States and New England follow:

TABLE NO. 7.

PERCENTAGE OF ILLITERACY IN BROOKLINE, COMPARED
WITH URBAN UNITED STATES AND URBAN
NEW ENGLAND.

<i>Illiteracy Among</i>	<i>BROOKLINE</i>	<i>United States</i>	<i>New England</i>
Total number.....	1.0	5.1	5.6
Native white.....	0.1	0.8	1.5
Foreign born.....	2.6	12.6	13.7
Negro.....	0.5	17.6	7.1

The large percentage of superior intelligence is indicated by the number of its citizens whose names appear in "Who's Who in America." The edition for 1914-15 contains the names of 170 people whose residence is given as Brookline. The most recent edition combines Brookline with Boston in this respect and it is very difficult, if not impossible, to isolate those living in Brookline. But, taking the number given as residing in all other cities in the latest edition and using 170 as the number for Brookline, the figures warrant the assertion that no other city in either group, one of which was selected in part on the basis of reputed intelligence of its people, has so large a number of names in this "biography of eminent men" in proportion to its population as has Brookline.

THE OCCUPATIONS OF THE PEOPLE.

The next question which arises naturally out of what has already been said is, "What do these people do to make their living?" In the first place it is to be said that as compared with other cities in the national and selected groups Brookline seems to be a town in which the men are freed from the necessity of entering a "gainful occupation" to a greater extent than are the women. In but seven of the 50 cities in the wider group and in but four of 14 cities in the selected group are smaller percentages of men engaged in work. In Brookline this figure is 76.5. On the other hand, with the women there is no city in the first and but three in the second group where larger proportions of females are at work — the percentage being 39.6. This position of Brookline is modified somewhat, though but slightly, by correcting for the large number of servants as made above. The corrected figure would be near 32.5 per cent and this would place two of the first group (Boston and Newton) and nine of the second group ahead of Brookline. The following table, No. 8 gives the proportionate number engaged in each large group of occupations as determined by the United States Census Office, and also the proportion for cities of the United States as given in the Salt Lake Survey, page 17.

TABLE NO. 8.

NUMBER ENGAGED IN BROOKLINE IN EACH OCCUPATION FOR EACH 1000 EMPLOYED*.

	Males		Females	
	In BROOKLINE	In all Cities	In BROOKLINE	In all Cities
1. Agriculture and animal husbandry.....	40	10	1	2
2. Extraction of minerals.....	2	6	0	0
3. Manufacturing and mechanical industries.....	224	473	70	313
4. Transportation.....	110	119	12	18
5. Trade.....	287	175	33	96
6. Public service.....	42	23	0	0
7. Professional service.....	113	43	83	88
8. Domestic and personal service	106	69	734	348
9. Clerical occupations.....	76	82	67	135
Totals.....	1000	1000	1000	1000

*The Brookline data are taken from the Bureau of the Census Report upon Population for 1910, page 214; the data for all others from the Report of a Survey of the School System of Salt Lake City, page 17.

The relatively small number of men engaged in manufacturing and mechanical pursuits and the large number in trade, professional service, agriculture, and domestic and personal service are apparent; also the large number of women engaged in domestic and personal service and professional service (taking into account the unbalancing of the percentage by the large number of servants) and the small number in manufacturing and mechanical industries.

But it is just as important to know what stations in the occupations are held — the proportion of proprietors, managers, clerks, and laborers. Table No. 4 in the appendix contains the computations. While it has been difficult to differentiate between the various ranks in the various occupations so that they are co-ordinate one with another, yet it may be said that the information furnished there gives an approximate knowledge of the situation.

The large proportion of men and women in positions of the highest rank is unusual. Among the men there are practically as many proprietors and firm members, or those who carry the financial and managerial responsibility, as clerks and other subordinate salaried employees, and when to the proprietors are added the salaried superintendents and managers their number exceeds the number of laborers and wage earners by 200. While the proportion of men engaged in manufacturing and mechanical pursuits is less than one-half that usually found, almost half of them are either proprietors or managers. The same distribution of large numbers in high positions holds even more strongly in trade, with this added weight, that there are more engaged in trade than in any other calling and almost two-thirds more than in the typical American city.

The number of women in high positions is likewise notable, notwithstanding the small percentages in that column caused by the unusually large numbers of house servants — probably the highest proportion of all cities in the country.* While the number engaged in manufacturing and mechanical pursuits is less than one-fourth the normal for American cities, yet over seven out of 10 are proprietors or managers. A similar situation exists in the trades; although only one-third the normal number are engaged, one out of every five is in the highest rank. It is to be noted also that only one-half the usual number are in clerical positions.

The large proportion of men in professional service and the large proportion in the highest class of positions, both among men and women, within this group is still another noteworthy characteristic.

*While this factor has operated to increase the number of females over males, the number of unmarried females, the number of persons in a family and in a dwelling, and to reduce the number of children under 15 in proportion to the entire number, yet the position of Brookline among the other cities is not disturbed thereby. Assuming that the proportion of females engaged in domestic and personal service in Brookline is the same as in other cities, and that the population of the city were reduced by the difference, the number of males to females would be 73.6 to 100. Assuming that all remaining were single, the number of single females would be 47.6 per cent of all, while the per cent of population below 15 and from five to 14 would be 20.6 and 14.9 respectively. So Brookline would still retain its location at or very near the extreme in all these respects.

The large number of men engaged in agriculture, forestry and animal husbandry is caused by the large number of estates in the southern part of the town, while the larger number of laborers and wage earners in transportation than would be expected from a consideration of the above figures is caused by the fact that a terminal of one of the Boston car lines is situated in the town just above the Village.

Most of the men and women of Brookline carry on their vocations in Boston and other suburban towns, which are all easy of access. This may be illustrated by those engaged in manufacturing, for which alone we have data. The number of wage earners is 936, while the average number working in the town is 340, or 36 per cent of the total, providing all working in these establishments lived in the town. The proportion would probably be still smaller for those in higher positions, and in some cases very much smaller. (See appendix, Table No. 4 for analysis).

MANUFACTURING ESTABLISHMENTS.

Brookline is a town of residences and the business and manufacturing establishments are relatively few. There is no city either in the larger or in the special group, the latter of which were selected partly on the basis of their reputation as residential cities, which has so few manufacturing establishments, and there are but three cities which have a smaller number of wage earners. In the value of products manufactured it is again the lowest. Thus again is Brookline found at the extreme end of a distribution. It provides very few vocational opportunities within its own boundaries for its people. A table for the selective group of cities covering these points is given on the following page.

TABLE NO. 9.

NUMBER OF MANUFACTURING ESTABLISHMENTS, AVERAGE
NUMBER OF WAGE EARNERS, AND VALUE OF PRODUCTS
IN SELECTED CITIES.*

1909.

<i>Cities</i>	<i>No. of Establishments</i>	<i>Average No. of Wage Earners</i>	<i>Value of Products in Thousands</i>
1. Boston	3,155	69,637	\$237,457
2. Los Angeles	1,325	17,327	68,586
3. Yonkers	158	12,711	59,334
4. Springfield	346	11,855	31,773
5. Newton	46	2,174	6,279
6. Madison, Wis.	116	1,792	5,467
7. East Orange	42	1,386	3,725
8. Berkeley, Cal.	84	1,084	4,435
9. San Diego	117	1,071	4,741
10. Evanston, Ill.	60	837	3,778
11. New Rochelle	42	735	1,669
12. Colorado Springs, Col.	59	516	1,733
13. Pasadena	88	499	1,724
14. Brookline	16	340	532
15. Oak Park	23	282	1,118
16. Montclair	23	252	1,026
17. White Plains	33	249	816

*Thirteenth Census of the United States, 1910. Abstract, page 529.

DISTRIBUTION OF WEALTH.

The economic status of the people of Brookline furnishes some interesting contrasts. The total number of taxables of the town for the year 1915 was 8355, but of this number 5031 paid a poll tax only and 34 more were declared exempt from such tax. Thus 60 per cent of the taxables had no real or personal property subject to taxation that the assessors discovered. Just above these are approximately 10 per cent — about 840 — of the taxables who paid for the year 1915 less than \$25 in taxes. At a tax rate of \$14.10 on \$1000 of property, this 10 per cent may be said to have property worth less than \$1775 each with the approximate mean at about \$900. At the opposite end of the distribution are approximately 1.8 per cent or 150 of the

taxables who pay taxes of \$1000 or more upon property valued at \$71,000 or over, while probably over 100 pay taxes on \$100,000 or more. Between the two extremes there is a gradual tapering down from the lower to the higher end. The median property tax was a little over \$105, representing a valuation of slightly more than \$7500. In other words, one-half of those who paid property taxes had property worth less than \$7500 and one-half had property worth more than that amount. Summing up, it may be said that of approximately 8355 taxables 60 per cent paid no property tax, 70 per cent paid on less than \$1775, 80 per cent on less than \$7500, 18.8 per cent on between \$7500 and \$100,000 and 1.2 per cent on over \$100,000 worth of taxable property. Table No. 5 in the appendix gives more complete information upon this subject.

The homes and the family life must and do represent as wide a variation as the scope of wealth, and the children coming from these homes possess just as varying past experiences, knowledge, habits, tendencies, and health as those wide extremes would produce. Below the Village, in the vicinity of the Parsons School and radiating out from the center to the south and west, is a community that can as properly be called a slum district as certain portions of Boston or any other large city. The three-story frame buildings, containing six flats of three rooms each, with their dark, dirty halls and loathsome sanitary provisions, are set closely together so that there is little air or lighting space. The streets are narrow, and disorder and neglect are everywhere apparent. The social conditions provided by such homes and the poverty that exists in them present a real problem to those who have in charge the public schools. In vivid contrast are the magnificent homes upon the hills, many of them with a large acreage, some of whose owners send their children to private schools in the town, city or surrounding suburbs. These latter children have an entirely different past, different tastes and habits, different destination in life, and some of them present difficulties altogether as great as, if not greater than, the children of the poor.

THE TOTAL WEALTH OF BROOKLINE.

Brookline is a wealthy town. In both assessed and real valuation per capita of population it is one of the highest in the United States. The accompanying tables, while they contain many approximations, are still sufficiently accurate and dependable to establish this point. Only South Omaha in the general list and San Diego, Cal., and Milton, Mass., in the special group approach at all closely to Brookline. (See appendix, Table 6, for the national group of cities.)

TABLE 10.

ASSESSED VALUATION PER CAPITA, 1912 — SELECTED GROUP.

<i>Cities</i>	<i>Basis of Assessment</i>		
	<i>Assessed (per Cents of Valuation per Capita</i>	<i>Estimated True Value)</i>	<i>True Valuation</i>
1. Brookline, Mass.	\$3,659.92	100	\$3,659.92
2. Milton, Mass.	3,452.77	100	3,452.77
3. San Diego, Cal.	1,051.05	31	3,390.34
4. Pasadena, Cal.	1,171.35	49	2,390.51
5. New Rochelle, N. Y.	1,072.97	60	2,088.30
6. Boston, Mass.	2,069.84	100	2,069.84
7. Newton, Mass.	1,915.90	100	1,915.90
8. Los Angeles, Cal.	802.33	44	1,823.48
9. Madison, Wis.	1,356.09	80	1,695.10
10. Montclair, N. J.	1,678.98	100	1,678.98
11. Springfield, Mass.	1,556.11	100	1,556.11
12. Berkeley, Cal.	786.77	56	1,404.95
13. East Orange, N. J.	1,297.58	100	1,297.58
14. White Plains, N. Y.	1,014.59	80	1,268.24
15. Colorado Springs, Colo.	400.77	33	1,202.31
16. Evanston, Ill.	406.17	33	1,218.51
17. Oak Park, Ill.	316.80	33	950.40
18. Yonkers, N. Y.	885.60	100	885.60

Brookline has always in recent years been liberal in support of her public schools, one of the most liberal in the State, always ranking close to the top in a table in the State report showing the amount spent per pupil. At the same time in the amount

per \$1000 of valuation of taxable property that has been expended she has uniformly been among the very lowest. She is, in fact, so wealthy that the largest appropriation put upon her causes but the slightest strain.

Finally, it is a progressive town whose population is increasing more rapidly than the normal for cities of the same population group. But 15 of the 51 cities had a more rapid growth from 1900 to 1910. In the more selected group she stands below the normal; her rate of growth, 39.4 per cent, was exceeded by the three California cities, by the five suburbs of New York and by Springfield.

CHAPTER II.

THE BROOKLINE SCHOOL SYSTEM.

The school system includes thirteen grades above the kindergarten. Enough kindergartens are provided to accommodate for two years all children of the town who are not ready for entrance into the first grade. Above the kindergarten are the elementary schools of nine grades and beyond these a high school with courses covering four years. Children may enter the first grade at the age of five, but the majority are at least six years of age on promotion from the kindergarten. Some optional studies are offered in the eighth and ninth grades and in the high school courses of the usual variety are open to choice. A School of Practical Arts affords prevocational training for pupils not adapted to succeed in the more bookish work of the high school.

DISTINCTIVE FEATURES.

Liberal Expenditures.

Few communities are so liberal in provision of kindergartens. No portion of the town is neglected and no child of suitable age need lack this highly valuable form of training. This liberality shown in providing kindergartens seems characteristic of the attitude of the town toward education generally. Being one of the richest communities in the world, it can provide thus liberally for its schools without imposing an appreciable burden upon property. The amount of taxable property is so vast and the population so small as to make the educational situation in Brookline absolutely unique in America.

The old New England town meeting, in modified form, is still retained in Brookline. The School Committee of nine members is an elective body with large powers but dependent upon the town meeting for funds to carry out its program.

The best traditions of school management in respect to the functions of a board of control have apparently been operative

in Brookline for many years. The School Committee is a legislative body. It receives reports as to conditions and needs, weighs recommendations and determines the broader lines of policies. Having decided upon these policies, it entrusts their execution to a salaried executive, the Superintendent of Schools, giving him large latitude in matters of detail. This is the policy under which education has made the most notable progress in American cities. A board of education occupies a very important position and upon its good judgment as to what to do and what to let alone depends much of the success of the administration of the schools. In no phase of school procedure does the wisdom of the Brookline School Committee's policy show to better advantage than in the vitally important matter of securing teachers. The general policy seems to be to offer salaries attractive to the best teachers in New England and then to give the Superintendent practically a free hand in securing those who, in his expert judgment, can render acceptable service. Elsewhere in this report enough is said of the high average of ability found in the Brookline teaching force to show that, in the opinion of the Survey Staff, this enlightened policy of the School Committee has had abundant justification in its results, for, without question, this important duty which has been entrusted to the Superintendent of Schools has been well performed.

Short Daily Sessions.

In nearly all school systems of the United States, exceptions being found chiefly in the South, the school day for elementary schools is divided into two sessions, each broken by a short recess and separated by a noon intermission of an hour and a half, during which children go to their homes for luncheon. High schools are usually run on the single-session plan because the majority of children in attendance live at a distance from the school too great to make it practicable to go home at noon. This, however, is recognized as a distinct disadvantage to be met by special provisions for safeguarding the health of the pupils. At the noon intermission a warm meal is served and sufficient time is appor-

tioned to the noon recess to insure freedom from hurry in its administration.

For more than fifty years Brookline's elementary schools, as well as the high schools, have been run on the one-session plan, under which the net maximum available school time is four and a half hours. The disadvantages of this plan as it concerns the elementary schools are discussed in the chapters of this report relating to health; and the disadvantages from the point of view of administering the courses of study are frequently referred to elsewhere in the report. A compromise plan which provides for two sessions on certain specified days and a single session on other days has been found fairly satisfactory in the city of Newton, Mass. On the afternoons of one-session days parents arrange for music and dancing lessons for their children, or for other extra school interests, while the longer two-session days of the week allow the schools to carry out an adequate program. Several members of the Survey Staff, each looking at the question from his own particular standpoint, have found that the children in the Brookline schools, grade for grade, are a year over-age by United States age grade standards. While there are other factors which help to account for this condition, there can be little doubt that the shorter school day necessitated by the single session in elementary schools furnishes a part of the explanation. Some advantages might be gained by making general the voluntary after-school opportunity afforded in some schools to pupils in need of special help, but this would be far from a complete solution of the difficulty. As to duties of teachers after 1:30, the nine-grade school principals gave various answers. Some said no duties except what the teachers voluntarily assumed; but one said she expected the teachers to be in their rooms after 1:30 regularly for one or more days each week to give help to backward pupils, and that her teachers quite consistently fulfilled this expectation. In view of the unusually early closing of the school session in Brookline, if the one-session plan is to remain the practice, it would seem wise to extend to all the schools and enact into a rule the foregoing arrangement for afternoon special help to pupils needing individual attention beyond what can be given in the regular class session.

Class Promotions.

In the Brookline schools class promotions are made once each year instead of semi-annually or oftener as in some systems. There are certain evident advantages accruing to pupils from the more frequent regrouping which elsewhere is advocated partly for the purpose of bringing together pupils of approximately equal power and partly for the purpose of facilitating rapid advancement of individuals and groups. In a small system of schools like that of Brookline, however, the semiannual promotion plan would present difficulties on the organization side which do not appear in large systems and which would tend to minimize the advantages. Therefore, while in the opinion of the Survey Staff the semi-annual plan admits of more flexibility in management than the annual plan, they are inclined to agree with the Superintendent that it is not, on the whole, desirable to depart radically from the annual plan of class promotion now in vogue. They advise, however, that where numbers permit more attention be given to forming homogeneous working sections so that there may be rapid-moving groups and slow-moving groups advancing according to ability without too much regard to fixed dates.

The Freedom of the Teacher.

The care with which teachers are selected for the Brookline schools insures a degree of competency in the teaching force which may properly justify the absence of that minutely prescribed daily, weekly and monthly procedure which is so often found in school systems, and which is perhaps not out of place when the instruction or much of it must be given by teachers of extremely limited experience. The course of study prescribes grade limits, but it gives little in the way of detail or specific directions as to method. Responsibility, therefore, devolves upon each teacher to work out a syllabus in accordance with his own best judgment.

For example, the Course of Study in Language and Grammar for Grade VII, covering oral and written exercises, Spelling, Grammar, Reading, Memorizing, Penmanship and French (elective), is included in a single page of the 40-page pamphlet entitled "Courses

of Studies for the Primary and Grammar Schools." The treatment of this subject in other grades and of other subjects in all grades is equally brief. The discussion of the Course of Study in History, given in another part of this report, illustrates some of the disadvantages which attend reliance upon so brief an outline of studies. Supervising officers may well hesitate to indulge in minute prescription lest they relieve the classroom teacher of all responsibility, but, on the other hand, it is desirable through conferences and committee work to pool the accumulating experience of the teaching force and, through a more or less elaborate syllabus in each subject worked out by the teachers themselves, make accessible to every teacher the best thought of all workers in a given field. A course worked out in this way is suggestive and not prescriptive and it serves to save the time of all teachers. Furthermore, such a syllabus would unify and standardize the treatment of a subject throughout the school system without encroaching upon the legitimate freedom of any teacher.

At present there are very wide differences in the emphasis given by different teachers to the same topic in a given grade. For instance, exercises in formal grammar were heard in certain seventh grades which were plainly within the mental grasp of only the most highly gifted and symbol minded of the pupils. These were exercises which nowadays are not ordinarily attempted below the ninth grade or the high school. If ability to handle abstractions of such difficulty is the standard for promotion in the judgment of a few teachers here and there, while other teachers are promoting more on the basis of skill in the use of English in oral and written composition, it is plain that such great divergence in standards must result in great inequalities in the promotion of pupils from grade to grade and in part account for the amount of over-age shown in another chapter of this report. In the chapter on "Standard Tests" attention is drawn to the large amount of variation in the system shown by the results of the tests. This applies to all subjects in which tests were given. So far as this may be due to individual differences in the interpretation of the Course of Studies by different teachers, the obvious remedy would be a fuller syllabus.

In the opinion of the Survey Staff, the work of the Brookline schools would be improved and the time of both teachers and pupils economized if through conferences among the teachers themselves the standards to be met and the details to be treated in such study were determined somewhat definitely and issued under the authority of the Superintendent as a guide to classroom procedure. Using a syllabus made up in this way, no teacher need feel that a limitation is put upon professional liberty, since the prescription, so far as it is a prescription, has been the joint work of those who are to follow the prescription.

The idea underlying the freedom accorded to teachers in Brookline is admirable and it is far from the spirit and purpose of this report to suggest any real reduction in the amount of freedom allowed. The suggestion here made is that there be more co-operation among schools and teachers, so that the good developed in one classroom or in a single building may be made available throughout the school system. It seems to the Survey Staff that individuality has been cultivated to such an extent in the Brookline schools that unity is sacrificed. When individuality goes to such an extreme as to hinder the pooling of experience for the benefit of the whole school system, the need of definitely organized co-operation seems evident. Co-operative efforts are found here and there, as, for instance, the revision of the English course in the high school and the conferences that high school departmental heads have been conducting with upper-grade teachers handling subjects continued in high school.

Size of Classes.

In his reports the Superintendent directs attention to Brookline's policy of supplying enough teachers to keep the number of pupils per teacher relatively low. The following table shows the size of classes in grammar and primary schools for a period of four years:

	1911-12	1912-13	1913-14	1914-15	1915-16
Pupils per teacher, grammar grades.....	31	31	30	30	28.2
Pupils per teacher, primary grades.....	30	29	30	30	30.0

This state of affairs supplies one condition for doing highly effective work in the education of the children. Two other circumstances conditioning effective work are the efficiency of the teacher and the content of the Course of Study which children are following. The favorable opinion which members of the Survey Staff have formed of the elementary teaching force has already been set forth. The teachers seemed entirely worthy of the children's respect. The third condition of effective work is the content of the elementary school curriculum through the several grades. Even if teachers are doing well what they are attempting, the question whether they are attempting the best things to do in the elementary course is a very important one. But the printed "Course of Studies" is too brief to furnish an adequate answer to this question. On this point, therefore, reference must be made to the chapter on "Standard Tests," since any course may fairly be judged by its results.

The Supervision of the Schools.

As listed in the Manual, there are, besides the Superintendent and the grammar school principals, three supervisors. Since, however, one of the supervisors spends 25 periods per week actually teaching high school and practical arts classes, the actual number devoting their entire time to supervision is reduced to two. In the chapter on "School Finances" it is shown that in the proportion of the expenditures devoted to supervision Brookline is low in the list of cities compared and elsewhere in this report the need of more supervision is pointed out. Not only is adequate supervision of the special subjects lacking, but the Superintendent's office is under-staffed. In addition to his duties as the expert in education who must be a frequent visitor in all classrooms, conduct teachers' meetings, write and revise the Course of Study, travel extensively in search of teachers to fill vacancies, instruct the janitors as to their duties and see that they do their work properly, Brookline expects her Superintendent of Schools to act as business manager of the school system and as clerk of the School Committee.

All this may have seemed reasonable before the town had

attained its present population and before the requirements in Courses of Study and organization of the work of the schools had reached their present state of complexity. There are just as many problems to be studied and there is just as wide a range of decisions to be made in Brookline as in any other city, and it is beyond the ability of one man, no matter how expert he may be to find the time necessary to give adequate attention to all of the thousand and one things demanding oversight, from the kindergarten through the high school. Many of the problems in a progressive school system require prolonged and sustained attention which the chief executive officer of the School Committee cannot give.

The time of an assistant superintendent could be utilized to as good advantage in Brookline as in a city of larger size. A city of 100,000 inhabitants has no more problems in connection with its schools than a city of 30,000 inhabitants. Its problems require no more study. In some respects the larger the city, the easier is the solution of its problems. It is, therefore, not primarily on account of the wealth of Brookline that the Survey Committee recommends that an assistant superintendent of schools be employed, though the fact of Brookline's exceptional wealth, as well as her desire to have the best possible schools, is an important factor in support of the recommendation.

The Superintendent's secretary impressed the Survey Staff as being notably zealous and efficient. The secretarial work now required is well done, but if the recommendations of this report are adopted there will be an extension of the scope of clerical work of the office and an additional clerk or assistant secretary should be provided.

CHAPTER III.

SCHOOL FINANCES.

How much do the schools of Brookline cost?

In order to make an intelligent study of the costs of the Brookline schools the Survey Committee found it necessary to employ an accountant to go over all the payments and to classify each item in them in accordance with the principles of school accounting as formulated by the United States Commissioner of Education and the National Education Association. It was practicable to do this only for the past two years, 1914-15 and 1915-16. The figures furnished by the accountant for each division of expense for each of these years were reduced to unit costs, using the number of pupils in average daily attendance as the basis. The unit costs for the two years were then averaged together in order that fair measure of costs might be secured. The results of these operations for the day schools, which cause 98 per cent of the total expense, are contained in Table No. 1.*

How do the expenses of Brookline schools compare with the expenses for schools in other cities?

As compared with cities in general in the United States, the costs of the schools are high. To those who are engaged in public school administration, it is apparent at a glance at the above figures and it is generally recognized to be the fact in Brookline. The Survey Committee has, therefore, given its attention to a comparison of costs of cities that are most like Brookline as regards wealth, intelligence of the population, proximity to urban centers, absence of industrial and commercial life, and reputation of schools — all of which factors have a tendency to promote high costs of education. These cities are those included in the selected group in Chapter I.

*The total expenses in 1914-15 were \$288,189.88; for evening schools, \$4485.70; and for vacation schools, \$2885.88. For 1915-16, the figures were \$301,535.76, \$3631.32 and \$2745.74 respectively.

TABLE NO. 1.

AVERAGE COSTS PER PUPIL FOR EACH ITEM OF EXPENSE OF
SCHOOL YEARS 1914-15 AND 1915-16, BASED ON AVERAGE
DAILY ATTENDANCE.

	<i>General Control</i>	<i>Elementary Grades 1-9</i>	<i>Kinder- garten</i>	<i>Secondary Schools High School of Prac. Arts</i>
General Control:				
Board of Education and business offices.....	\$0.81	....	....	....
Superintendent of Schools, office of.....	1.45	....	....	....
Enforcement of compulsory education law.....	.36	....	....	....
Instruction:				
Salaries of supervisors.....		\$1.03	....	\$2.58 \$12.02
Other expenses of supervisors.....		.05	....	.04 .11
Salaries of principals.....		7.28	....	6.92 39.28
Other expenses of principals.....				.08 .60
Salaries of teachers.....		33.70	\$54.00	76.34 99.78
Textbooks.....		1.26	....	2.61 2.03
Stationery and supplies.....		1.61	1.82	5.57 10.93
Other expenses of instruction.....		.14	.20	.54 .23
Operation of School Plant:				
Wages of janitors and assistants....		5.25	6.97	7.70 8.38
Heat, light and power*.....		4.09	....	2.78 2.68
Janitors' supplies.....		.67	....	.31 .41
Maintenance of Plant*:				
Repairs of buildings and upkeep of grounds.....		3.77	....	1.42 2.84
Repairs and replacement of equipment.....		1.10	....	.85
Auxiliary Agencies:				
Promotion of health.....		.82	....	.50 .43
Transportation of pupils.....		.73	1.43	....
Miscellaneous:				
Tuition trade schools.....		.14	....	....
Care of children in institutions.....		.11	....	....
Pensions.....		.74	....	1.59
Total.....	\$2.62	\$62.46	\$63.40	\$109.78 \$181.03

*The charges of the municipal heat, light and power plant and the exterior building repairs and upkeep of grounds expenses defrayed by the municipality are included.

The costs for these cities were obtained from unpublished data in the office of the United States Commissioner of Education. Copies were made of the schedules that had been prepared in the various city education offices showing expenses and average daily attendance for the years 1914-15 and 1915-16. The actual expenses for each year were reduced to unit costs and these averaged together. It is these averages which appear in the tables. However, the fact that some of these cities reported upon the abridged instead of the standard schedule made it necessary that the expenses of all the cities be "telescoped" into the smaller number of items upon the briefer schedule. It was, of course, necessary to do this for the Brookline expenses given in Table No. 1. As the expenses of kindergartens are not reported separately to the National Education office, but are combined with those of elementary schools, the same combination had to be made for Brookline. Likewise, expenses are reported for secondary schools as a whole, so the expenses of the School of Practical Arts in Brookline are merged with those of the high school. The results are submitted in Tables Nos. 2, 3 and 4.

TABLE NO. 2.

AVERAGE EXPENSES OF GENERAL CONTROL PER CAPITA OF
AVERAGE DAILY ATTENDANCE IN DAY SCHOOLS FOR YEARS
1914-15 AND 1915-16 IN GROUP OF 17 SELECTED CITIES.

1. Montclair.....	\$3.55	11. Pasadena.....	\$2.04
2. Milton.....	3.36	12. Newton.....	1.99
3. Wellesley.....	3.27	13. New Rochelle.....	1.98
4. Colorado Springs.....	2.77	14. Springfield.....	1.94
5. White Plains.....	2.72	15. Yonkers.....	1.83
6. Evanston.....	2.67	16. Berkeley.....	1.48
7. <i>Brookline</i>	<i>2.62</i>	17. Oak Park.....	1.41
8. San Diego.....	2.41		
9. East Orange.....	2.35	Boston.....	3.05
10. Madison.....	2.17	Los Angeles.....	3.68

TABLE NO. 3.

AVERAGE EXPENSES OF ELEMENTARY SCHOOLS PER CAPITA OF
AVERAGE DAILY ATTENDANCE FOR YEARS 1914-15 AND
1915-16 IN GROUP OF 17 SELECTED CITIES.

1. Montclair.....	\$77.90	11. Oak Park.....	\$46.51
2. Pasadena.....	65.03	12. Colorado Springs.....	46.39
3. <i>Brookline</i>	62.84	13. East Orange.....	46.24
4. Evanston.....	55.38	14. New Rochelle.....	45.49
5. Wellesley.....	55.35	15. Springfield.....	44.79
6. Berkeley.....	55.20	16. Yonkers.....	43.96
7. Milton.....	53.13	17. Madison.....	37.37
8. San Diego.....	50.19		
9. White Plains.....	46.91	Boston.....	45.54
10. Newton.....	46.72	Los Angeles.....	60.11

TABLE NO. 4.

AVERAGE EXPENSES OF SECONDARY SCHOOLS PER CAPITA OF
AVERAGE DAILY ATTENDANCE FOR YEARS 1914-15 AND
1915-16 IN GROUP OF 15 SELECTED CITIES.

1. Pasadena.....	\$139.50	10. Wellesley.....	\$85.26
2. San Diego.....	123.79	11. Colorado Springs.....	76.92
3. <i>Brookline</i>	116.80	12. Yonkers.....	75.85
4. Springfield.....	106.92	13. Newton.....	74.38
5. New Rochelle.....	98.40	14. Madison.....	66.91
6. Montclair.....	93.70	15. Milton.....	58.68
7. East Orange.....	93.43		
8. White Plains.....	92.39	Boston.....	83.21
9. Berkeley.....	91.04	Los Angeles.....	157.09

A study of the tables that have been given above reveals the following facts:

1. The costs per pupil of Brookline are among the highest in this selected group of cities of wealth and culture, but are not the highest. Montclair, N. J., and Pasadena, Cal., pay more per pupil for their elementary schools, and Pasadena and San Diego pay more for their secondary schools than does Brookline. In general control, however, six cities exceed Brookline. From this it may safely be concluded that very few cities in the United States, probably not more than two, Montclair and Pasadena, put more

money into their schools in proportion to pupils in average daily attendance than does Brookline.

2. The most costly department of the schools relatively is the School of Practical Arts. Its costs are 65 per cent higher than those of the high school. Nevertheless, the costs of the high school alone are exceeded by the secondary school costs of only two cities. These high costs of the School of Practical Arts could well be partly utilized in a Junior High School giving prevocational courses in industry or could be reduced through increased enrollment within itself, which would probably be one result of the establishment of such a Junior High School.

3. The next most expensive department relatively is the kindergarten, caused by a smaller number of pupils per teacher, as was the case in the School of Practical Arts. The costs are 58 per cent higher than those of the elementary schools. However, if the costs of the elementary schools alone are taken, Brookline still ranks third.

4. In regard to the costs of the elementary schools, it must not be lost sight of that the nine-year course increases the total expenditure by at least one-twelfth of the total cost for elementary schools, for, while the number of teachers is not so great in these grades, yet their salaries are higher, and the principals, who receive over two and one-half times as much as the teachers, give some time each day to teaching this grade. The additional cost is at least \$15,000 a year. The introduction of the Junior High School would omit this year and the money thus saved would be more than sufficient to provide the more varied courses which would be offered to suit the abilities and needs of individual pupils.

ANALYSIS OF COSTS — GENERAL CONTROL.

We must now turn our attention from total costs per pupil in the various departments to the different classes of expenses which together make up the totals. Is Brookline high or low when compared with other cities in each of these classes? Are her expenses well balanced, or is too much spent relatively for certain purposes? These two questions will be answered first for general control as a whole.

Table No. 2 shows that the amount per pupil expended for general control in Brookline, \$2.62, is exceeded by six of the 17 cities and by both Boston and Los Angeles. A comparison of the relative costs per pupil for elementary and secondary schools in Table No. 5 shows, (*) letting the sum of the costs per pupil for general control, elementary schools and secondary schools in each city equal 100 per cent, that the proportion per pupil for general control in Brookline is less than in nine of the 15 cities and also less than in Boston and Los Angeles. The inference from these figures is that Brookline can expend more than at present for general control. If expenses for these purposes had been 65 per cent more per pupil in average daily attendance, or \$2515, in 1916 her rank would have been third, the same as for cost for elementary and for secondary schools as wholes. If 36 cents per pupil, or \$1393, had been added, in 1916 Brookline then would have been the middle city in the list in the proportion per pupil spent for general control and the proper balance obtained. This topic will be touched upon from another angle later.

In this same connection it may be noticed, parenthetically, from Table No. 5 that in proportion to each other the high schools are costing more per pupil and the elementary schools less than the proportion established by the group standard as represented by the medians. Going back to Tables Nos. 3 and 4, it may be said that while the costs of both are high and both have the same rank among the cities, Table No. 6 aids in this interpretation by indicating that the high school costs are relatively higher than the elementary.

* Evanston and Oak Park, Ill., are not included because they have no city high schools, their needs being served by township high schools. This applies to all tables giving proportion of expenses. (This method of measuring balance or proportion between various classes of expenses as used here and later rests upon the principle that the median [or middle amount, similar to the average, in effect] is the best single measure of the group. Referring to Table 5, the medians 1.6, 35.2 and 62.8 may be said to represent the best relationship between costs per pupil for general control, elementary schools and secondary schools in the type of cities represented in the group. These figures must not be taken, however, as proving anything of themselves. They serve their purpose in raising questions, indicating probable truths and tendencies, and in assisting us in our thinking upon the problems as wholes, of which the data furnished are but parts.)

TABLE NO. 5.

PROPORTION OF TOTAL EXPENSES EXPENDED FOR GENERAL CONTROL, ELEMENTARY SCHOOLS AND SECONDARY SCHOOLS.

<i>Cities</i>	<i>General Control</i>	<i>Elementary Schools</i>	<i>Secondary Schools</i>
Milton.....	2.8	46.1	51.1
Wellesley.....	2.3	38.5	59.2
Colorado Springs.....	2.2	36.8	61.1
Montclair.....	2.0	44.5	53.5
Madison.....	2.0	35.2	62.8
White Plains.....	1.9	33.1	65.0
East Orange.....	1.6	32.6	65.8
Newton.....	1.6	38.0	60.4
Yonkers.....	1.5	36.2	62.3
Brookline.....	1.4	34.4	64.2
New Rochelle.....	1.4	31.2	69.4
San Diego.....	1.3	28.8	69.9
Springfield.....	1.1	28.7	70.2
Berkeley.....	1.0	37.4	61.6
Pasadena.....	1.0	31.5	67.5
Median.....	1.6	35.2	62.8
Boston.....	2.3	34.6	63.1
Los Angeles.....	1.7	27.2	71.1

ANALYSIS OF COSTS — ELEMENTARY SCHOOLS.

In the analysis of the costs of the elementary schools, class by class, a similar method of treatment will be followed. Table No. 6 gives in each of its divisions the cost per pupil contained in Table No. 3 arranged in order of rank of the cities.

TABLE NO. 6.

AVERAGE COST PER PUPIL IN 17 SELECTED CITIES FOR YEARS
1914-15 AND 1915-16 OF VARIOUS CLASSES OF EXPENSES OF
ELEMENTARY SCHOOLS ARRANGED IN ORDER OF THEIR
AMOUNTS.

(a)	SALARIES AND EXPENSES OF SUPERVISORS.	(b)	SALARIES AND EXPENSES OF PRINCIPALS.
1.	Milton..... \$5.38*	1.	Brookline..... \$6.63
2.	Montclair..... 4.83	2.	Pasadena..... 6.63
3.	Oak Park..... 3.88	3.	East Orange..... 5.00
4.	White Plains..... 3.49	4.	Colorado Springs..... 4.63
5.	San Diego..... 2.76	5.	Yonkers..... 4.14
6.	Evanston..... 2.75	6.	Berkeley..... 4.12
7.	Wellesley..... 2.15	7.	San Diego..... 4.03
8.	Newton..... 1.74	8.	New Rochelle..... 3.99
9.	Berkeley..... 1.41	9.	Madison..... 3.77
10.	Colorado Springs..... 1.31	10.	Newton..... 3.65
11.	Springfield..... 1.13	11.	Montclair..... 3.55
12.	New Rochelle..... 1.12	12.	Springfield..... 2.65
13.	Madison..... 1.00	13.	Wellesley..... 2.03
14.	Brookline..... .98	14.	White Plains..... 1.67
15.	East Orange..... .94	15.	Oak Park..... 1.22
16.	Yonkers..... .64	16.	Evanston..... .27
17.	Pasadena.....	17.	Milton.....
	Boston..... .66		Boston..... 2.61
	Los Angeles..... 1.43		Los Angeles..... 5.10

* Includes principals.

(c)

SALARIES OF TEACHERS IN ELEMENTARY SCHOOLS.

1. Pasadena.....	\$44.37
2. Montclair.....	43.33
3. Berkeley.....	38.81
4. Brookline.....	35.51
5. Wellesley.....	33.26
6. San Diego.....	32.14
7. Evanston.....	31.66
8. Milton.....	30.47
9. Yonkers.....	29.80
10. New Rochelle.....	29.27
11. White Plains.....	29.26
12. Colorado Springs.....	29.00
13. East Orange.....	28.88
14. Springfield.....	28.06
15. Newton.....	27.97
16. Oak Park.....	27.56
17. Madison.....	21.50
Boston.....	30.42
Los Angeles.....	40.44

(e)

STATIONERY, SUPPLIES AND OTHER EXPENSES OF INSTRUCTION.

1. Montclair.....	\$4.39
2. Evanston.....	3.54
3. White Plains.....	2.72
4. San Diego.....	2.46
5. Berkeley.....	2.44
6. Springfield.....	2.32
7. Brookline.....	1.85
8. Wellesley.....	1.74
9. Pasadena.....	1.74
10. Milton.....	1.72
11. Colorado Springs.....	1.65
12. Oak Park.....	1.45
13. East Orange.....	1.44
14. New Rochelle.....	1.26
15. Yonkers.....	1.04
16. Newton.....	1.01
17. Madison.....	.76
Boston.....	1.24
Los Angeles.....	1.52

(d)

TEXTBOOKS — ELEMENTARY SCHOOLS.

1. White Plains.....	\$1.39
2. Wellesley.....	1.19
3. Brookline.....	1.14
4. Montclair.....	.97
5. Springfield.....	.94
6. East Orange.....	.91
7. Yonkers.....	.82
8. Milton.....	.71
9. Newton.....	.66
10. New Rochelle.....	.62
11. Colorado Springs.....	.50
12. Evanston.....	.19
13. Madison.....	.10
14. Pasadena.....	
15. Berkeley.....	
16. San Diego.....	
17. Oak Park.....	
Boston.....	.74
Los Angeles.....	

(f)

WAGES OF JANITORS.

1. Montclair.....	\$6.1
2. Brookline.....	5.4
3. Milton.....	5.31
4. Wellesley.....	4.83
5. Evanston.....	4.78
6. Oak Park.....	4.36
7. Pasadena.....	3.69
8. New Rochelle.....	3.68
9. East Orange.....	3.44
10. Berkeley.....	3.37
11. Newton.....	3.26
12. Springfield.....	3.18
13. White Plains.....	2.92
14. San Diego.....	2.90
15. Yonkers.....	2.84
16. Colorado Springs.....	2.61
17. Madison.....	2.59
Boston.....	3.00
Los Angeles.....	3.11

(g)

HEAT, LIGHT, WATER, POWER AND
JANITORS' SUPPLIES.

1. Evanston.....	\$4.86
2. Montclair.....	4.74
3. <i>Brookline</i>	4.74
4. Milton.....	4.35
5. Oak Park.....	4.19
6. Wellesley.....	3.74
7. Madison.....	3.51
8. Springfield.....	3.39
9. New Rochelle.....	2.98
10. Colorado Springs.....	2.67
11. White Plains.....	2.42
12. East Orange.....	2.40
13. Newton.....	2.32
14. Pasadena.....	1.68
15. Yonkers.....	1.66
16. Berkeley.....	1.20
17. San Diego.....	1.13
Boston.....	1.98
Los Angeles.....	1.17

(i)

LIBRARIES.

1. Pasadena.....	\$0.83
2. San Diego.....	.56
3. Oak Park.....	.45
4. Berkeley.....	.40
5. Evanston.....	.14
6. Wellesley.....	.12
7. White Plains.....	.08
8. Yonkers.....	.06
9. Montclair.....	.05
10. New Rochelle.....	.03
11. Colorado Springs.....	.02
12. Madison.....	.01
13. East Orange.....	.01
14. Springfield.....	
15. Yonkers.....	
16. <i>Brookline</i>	
17. Newton.....	
Boston.....	
Los Angeles.....	.40

(h)

MAINTENANCE (REPAIRS AND
REPLACEMENTS).

1. Evanston.....	\$6.31
2. Newton.....	4.76
3. Montclair.....	4.65
4. <i>Brookline</i>	4.44
5. Pasadena.....	4.39
6. Berkeley.....	3.44
7. San Diego.....	3.40
8. Oak Park.....	3.09
9. Colorado Springs.....	2.98
10. Springfield.....	2.71
11. Milton.....	2.47
12. Wellesley.....	2.47
13. East Orange.....	2.46
14. Yonkers.....	2.26
15. Madison.....	2.22
16. White Plains.....	2.20
17. New Rochelle.....	2.11
Boston.....	3.20
Los Angeles.....	2.94

(j)

PROMOTION OF HEALTH.

1. Montclair.....	\$1.27
2. Milton.....	.82
3. Newton.....	.76
4. <i>Brookline</i>	.75
5. San Diego.....	.63
6. Evanston.....	.62
7. Pasadena.....	.61
8. East Orange.....	.48
9. Yonkers.....	.44
10. Wellesley.....	.39
11. Berkeley.....	.38
12. Madison.....	.34
13. White Plains.....	.28
14. Colorado Springs.....	.26
15. New Rochelle.....	.25
16. Oak Park.....	.19
17. Springfield.....	*
Boston.....	.43
Los Angeles.....	.39

(k)

TRANSPORTATION OF PUPILS.

1. Wellesley.....	\$1.68
2. Madison.....	1.59
3. San Diego.....	.98
4. Brookline.....	.78
5. Colorado Springs.....	.76
6. White Plains.....	.48
7. Evanston.....	.26
8. East Orange.....	.21
9. New Rochelle.....	.18
10. Newton.....	.15
11. Berkeley.....	.13
12. Oak Park.....	.12
13. Montclair.....	.03
14. Springfield.....	*
15. Yonkers.....	
16. Milton.....	
17. Pasadena.....	
Boston.....	.01
Los Angeles.....	.02

(l)

MISCELLANEOUS, INCLUDING PAYMENTS TO OTHER SCHOOLS, PENSIONS, RENT, ETC.

1. Montclair.....	\$3.82
2. Wellesley.....	1.68
3. Madison.....	1.59
4. Pasadena.....	1.10
5. San Diego.....	.98
6. Brookline.....	.90
7. Colorado Springs.....	.76
8. White Plains.....	.48
9. Evanston.....	.26
10. East Orange.....	.21
11. New Rochelle.....	.18
12. Newton.....	.15
13. Berkeley.....	.13
14. Oak Park.....	.12
15. Springfield.....	*
16. Yonkers.....	
17. Milton.....	
Boston.....	1.25
Los Angeles.....	3.61

These tables show that in the costs of elementary schools Brookline ranks highest, or first, in salaries and expenses of principals, second in salaries and wages paid janitors and their assistants, third in textbooks and in heat, light, water, power and janitors' supplies. On all other classes of expenses she ranks lower than in the total expenses of elementary schools. Still there are but two classes of expenses in which she is low, salaries and expenses of supervisors, and libraries, for which there is no expense whatsoever. In the other classes of expenses Brookline is high, but not among the highest three. From this we would infer that Brookline's rank as third in total cost of elementary schools is made up of a combination (1) of relatively high expenses for principals, janitors, textbooks and heat, light, power and janitors' supplies; (2) of relatively very low expenses for supervisors and libraries; and (3) of costs for the other items lying between these two extremes.

Table No. 7 furnishes the data relating to the distribution of expenses in elementary schools.

* Promotion of health, transportation of pupils and miscellaneous expenses undivided.

TABLE NO. 7.

PROPORTION OF TOTAL EXPENSES OF ELEMENTARY SCHOOLS
EXPENDED FOR EACH CLASS OF EXPENSES IN 15 SELECTED
CITIES IN THE YEARS 1914-15 AND 1915-16, ARRANGED
IN ORDER OF THEIR AMOUNTS.*

* Evanston and Oak Park, Ill., are not included because their high schools are not a part of the city system of schools and data relating to them are not available.

(a)	SALARIES AND EXPENSES OF SUPERVISORS.		(b)	SALARIES AND EXPENSES OF PRINCIPALS.	
1.	Milton.....	10.1	1.	Brookline.....	10.6
2.	White Plains.....	7.4	2.	Pasadena.....	10.3
3.	Montclair.....	6.2	3.	Madison.....	10.1
4.	San Diego.....	5.4	4.	Colorado Springs.....	10.0
5.	Wellesley.....	3.9	5.	Yonkers.....	9.4
6.	Newton.....	3.7	6.	New Rochelle.....	8.8
7.	Colorado Springs.....	2.8	7.	San Diego.....	7.9
8.	Madison.....	2.7	8.	Newton.....	7.8
9.	Berkeley.....	2.6	9.	Berkeley.....	7.5
10.	New Rochelle.....	2.5	10.	Springfield.....	5.9
11.	Springfield.....	2.5	11.	Montclair.....	4.6
12.	East Orange.....	2.4	12.	Wellesley.....	3.7
13.	Brookline.....	1.6	13.	White Plains.....	3.6
14.	Yonkers.....	1.5	14.	East Orange.....	1.1
15.	Pasadena.....		15.	Milton.....	

(c)	SALARIES OF TEACHERS.		(d)	TEXTBOOKS.	
1.	Berkeley.....	69.4	1.	White Plains.....	3.0
2.	Pasadena.....	68.3	2.	Wellesley.....	2.2
3.	Yonkers.....	67.7	3.	Springfield.....	2.1
4.	New Rochelle.....	64.3	4.	Yonkers.....	1.9
5.	Springfield.....	62.6	5.	Brookline.....	1.8
6.	Colorado Springs.....	62.5	6.	Newton.....	1.4
7.	East Orange.....	62.5	7.	New Rochelle.....	1.4
8.	White Plains.....	62.4	8.	Milton.....	1.3
9.	San Diego.....	60.3	9.	Montclair.....	1.3
10.	Wellesley.....	60.0	10.	Colorado Springs.....	1.1
11.	Newton.....	59.9	11.	Madison.....	.3
12.	Madison.....	57.5	12.	East Orange.....	.2
13.	Milton.....	57.4	13.	Pasadena.....	
14.	Brookline.....	56.6	14.	Berkeley.....	
15.	Montclair.....	55.8	15.	San Diego.....	

(e)

STATIONERY, SUPPLIES AND OTHER
EXPENSES OF INSTRUCTION.

1. White Plains.....	5.8
2. Montclair.....	5.6
3. Springfield.....	5.2
4. Milton.....	4.8
5. Berkeley.....	4.4
6. Colorado Springs.....	3.6
7. Wellesley.....	3.2
8. Milton.....	3.2
9. East Orange.....	3.1
10. Brookline.....	2.9
11. New Rochelle.....	2.8
12. Pasadena.....	2.7
13. Yonkers.....	2.4
14. Newton.....	2.2
15. Madison.....	2.1

(g)

HEAT, LIGHT, WATER, POWER AND
JANITORS' SUPPLIES.

1. Madison.....	9.4
2. Milton.....	8.2
3. Springfield.....	7.6
4. Brookline.....	7.1
5. Wellesley.....	6.8
6. New Rochelle.....	6.6
7. Montclair.....	6.1
8. Colorado Springs.....	5.8
9. East Orange.....	5.2
10. White Plains.....	5.2
11. Newton.....	5.0
12. Yonkers.....	3.8
13. Pasadena.....	2.6
14. Berkeley.....	2.2
15. San Diego.....	2.2

(i)

LIBRARIES.

1. Pasadena.....	1.3
2. San Diego.....	1.1
3. Berkeley.....	.7
4. Wellesley.....	.2
5. White Plains.....	.2
6. Montclair.....	.1
7. New Rochelle.....	.1
8. Yonkers.....	.1
9. Colorado Springs.....	T
10. East Orange.....	T
11. Madison.....	T
12. Brookline.....	
13. Milton.....	
14. Newton.....	
15. Springfield.....	

(f)

WAGES OF JANITORS.

1. Milton.....	10.0
2. Wellesley.....	8.7
3. Brookline.....	8.6
4. New Rochelle.....	8.1
5. Montclair.....	7.9
6. East Orange.....	7.5
7. Springfield.....	7.1
8. Newton.....	7.0
9. Madison.....	6.9
10. Yonkers.....	6.5
11. White Plains.....	6.2
12. Berkeley.....	6.1
13. Pasadena.....	5.7
14. San Diego.....	5.7
15. Colorado Springs.....	5.6

(h)

MAINTENANCE (REPAIRS AND
REPLACEMENT).

1. Newton.....	10.2
2. Brookline.....	7.1
3. Pasadena.....	6.8
4. San Diego.....	6.7
5. Colorado Springs.....	6.4
6. Berkeley.....	6.2
7. Springfield.....	6.1
8. Montclair.....	6.0
9. Madison.....	6.0
10. East Orange.....	5.3
11. Yonkers.....	5.2
12. Milton.....	4.7
13. White Plains.....	4.7
14. New Rochelle.....	4.6
15. Wellesley.....	4.5

(j)

PROMOTION OF HEALTH.

1. Montclair.....	1.6
2. Milton.....	1.6
3. Newton.....	1.6
4. East Orange.....	1.4
5. Brookline.....	1.2
6. San Diego.....	1.2
7. Yonkers.....	1.0
8. Pasadena.....	.9
9. Madison.....	.9
10. Wellesley.....	.7
11. Berkeley.....	.7
12. White Plains.....	.6
13. Colorado Springs.....	.6
14. New Rochelle.....	.6
15. Springfield.....	

(k)	TRANSPORTATION OF PUPILS.		(l)	MISCELLANEOUS, INCLUDING PAY- MENT TO OTHER SCHOOLS, PEN- SIONS, RENT, ETC.	
	1. Milton.....	3.6		1. Montclair.....	4.9
	2. Wellesley.....	3.2		2. Madison.....	4.3
	3. <i>Brookline</i>	1.2		3. Wellesley.....	3.1
	4. Newton.....	1.0		4. San Diego.....	1.9
	5. Yonkers.....	.7		5. Pasadena.....	1.7
	6. East Orange.....	.2		6. Colorado Springs.....	1.6
	7. Montclair.....	T		7. <i>Brookline</i>	1.4
	8. Pasadena.....			8. White Plains.....	1.0
	9. Berkeley.....			9. East Orange.....	.5
	10. San Diego.....			10. New Rochelle.....	.4
	11. White Plains.....			11. Newton.....	.3
	12. Colorado Springs.....			12. Berkeley.....	.2
	13. New Rochelle.....			13. Milton.....	
	14. Springfield.....			14. Springfield.....	
	15. Madison.....			15. Yonkers.....	

T=trace.

Taking the median proportions in these classes of expenses as the standards which joined together represent an ideal group standard for distribution of expenses, we can have by expressing the deviations of any expense from its standard in terms of the percentage of the standard, a fairly exact measure of the extent of the departure from the norm for that class of expense. In other words, we can thus obtain a coefficient of deviation from the standard for each kind of expense. These coefficients for any city, taken all together, reveal the extent to which that city is out of balance with the group standard. Those for Brookline are contained in Table No. 8.

TABLE NO. 8.

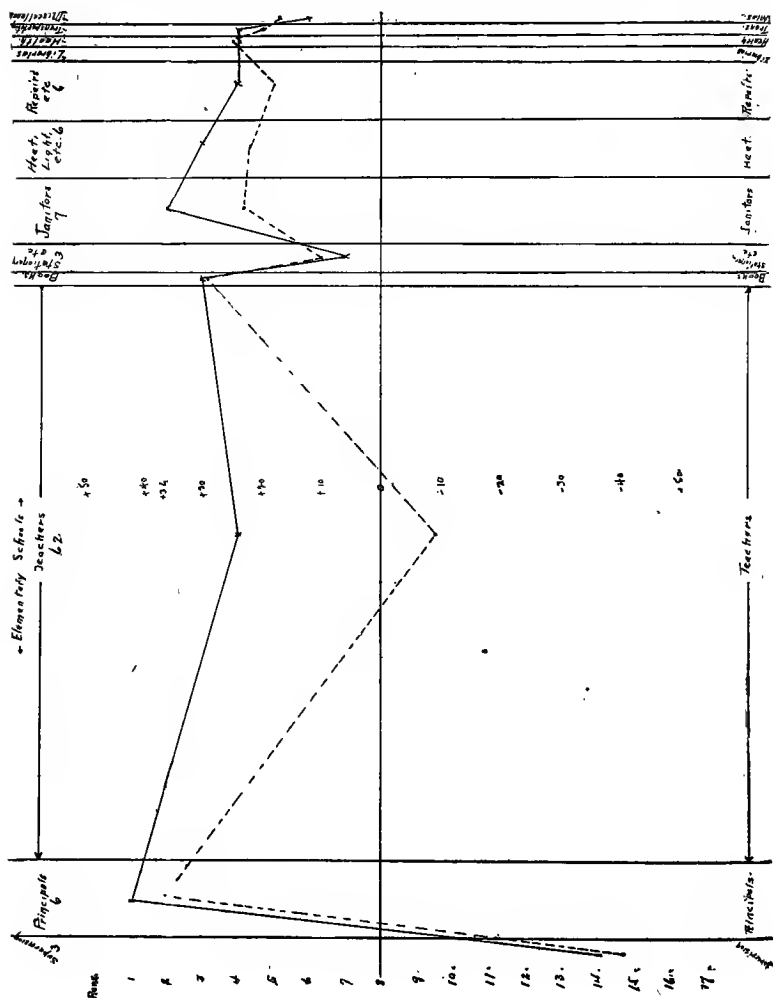
A COMPARISON OF THE DISTRIBUTION OF EXPENSES OF ELEMENTARY SCHOOLS IN BROOKLINE WITH THE DISTRIBUTION IN 15 SELECTED CITIES.

	<i>Standard Distribu- tion</i>	BROOKLINE <i>Distribu- tion</i>	<i>Coefficients of —Deviation—</i>	
			<i>Above</i>	<i>Below</i>
Supervisors.....	2.7	1.6	....	-40
Principals.....	7.8	10.6	+36	....
Teachers.....	62.4	56.6	....	-09
Textbooks.....	1.8	1.8	+29	....
Stationery.....	2.9	3.2	+10	....
Janitors.....	7.0	8.6	+23	....
Heat, light and janitors' supplies....	5.8	7.1	+22	....
Maintenance (repairs).....	6.0	7.1	+18	....
Libraries.....	.1	....	....	....
Health.....	.9	1.2	+26	....
Transportation.....	1.0	1.2	+20	....
Miscellaneous.....	1.2	1.4	+17	....
Total.....	99.6	100.4		

The position of Brookline among the other cities as regards costs per pupil and the distribution of expenses for elementary schools is represented graphically in Diagram I. The solid line represents the former as given in Table No. 6 and is to be read by the scale at the left; the dotted line shows the per cent or coefficients of deviation of the distribution given in Table No. 8 and is to be read by the scale in the middle. The horizontal space given each class of expenses represents the group standard for distribution of expenses.

DIAGRAM I.

COSTS OF ELEMENTARY SCHOOLS AND DISTRIBUTION OF EXPENSES THEREOF IN BROOKLINE COMPARED WITH COSTS AND DISTRIBUTION IN 15 SELECTED CITIES.



These tables and diagrams taken of themselves raise certain questions as: (1) Should not teachers' salaries be raised? (2) Should not the number of supervisors or their salaries be increased? (3) Should not the large expenditures for principals be reduced? (4) Should not expenses for janitors be reduced? (5) Cannot costs of (a) heating, lighting and janitors' supplies and (b) repairs be reduced?

Our data show that, as measured by the costs of schools in other cities, Brookline costs are extreme in varying degrees in these classes of expenses. The burden of proof is thus placed upon those in charge of the Brookline schools to justify the present expenditures in these respects. The Survey Committee can assist the School Committee by furnishing still further information which has a bearing upon the solution of certain of these problems. But before setting forth this information it desires to point out that which appears later in this chapter, namely, Brookline is less burdened than any other city in the selected group, and possibly than any other city of the United States, in the support of its public schools, and it spends less upon them, proportionately to what it spends for other municipal purposes, than any other city for which data are available. None of these expenditures can be curtailed, therefore, on the ground of large amounts of money spent for schools. This does not preclude, however, consideration of the question whether the money is spent efficiently or without waste, or whether it might not be spent to better advantage. This is a proper inquiry, no matter what the amount of wealth available may be, and it is from this standpoint that the further treatment proceeds.

Table No. 9 gives a comparison of the salaries paid in the various cities of the selected group for which complete and accurate data were obtainable. The figures given are in each case the median salary and are taken from Bulletins United States Bureau of Education, 1914, No. 16, and 1916, No. 31.

TABLE NO. 9.

SALARIES IN BROOKLINE COMPARED WITH SALARIES IN OTHER CITIES OF SELECTED GROUP 1912-13.

	Kinder- garten		Supervisors in Special Subjects	Special Teachers	Elementary Principal	Elementary Teachers	High School Principal	High School Teachers
	Direc- tors	Assist- ants						
Berkeley.....	900	.....	2000	1300	1920	1140	3000	1500
Pasadena.....	840	720	1600	1100	1900	1100	3000	1500
San Diego.....	804	360	.....	.....	1800	936	2700	1500
Colorado Springs.....	.....	.....	.....	.....	.....	924	.....	.....
Evanston.....	.....	.....	.....	.....	.....	800	.....	.....
Oak Park.....	.....	.....	.....	.....	.....	750	.....	.....
Brookline.....	775	675	1600	900	2500	900	3680	1425
Newton.....	650	300	2000	750	2300	775	3500	1100
Springfield.....	700	500	2000	900	1150	750	3200	1050
East Orange.....	900	500	1200	800	2900	800	3000	1200
Montclair.....	.....	.....	.....	.....	.....	875	.....	.....
New Rochelle.....	880	700	1350	1000	1900	850	3100	1400
Madison.....	.....	.....	.....	.....	.....	625	.....	.....

1. The salaries of elementary teachers in Brookline were in 1913 exceeded by no cities in the group except those in the mountain and Pacific States. In fact, only eight of about 250 cities of all sizes east of the Rocky Mountains included in these sources of information had higher salaries and all of these had larger populations than Brookline. On the other hand, it should be remembered that many cities have advanced their salaries during the past few years, while those of Brookline are much the same as in 1913.

2. The low rank and the small proportion for salaries of supervisors is probably caused largely by other cities charging to supervisors the salaries of teachers of special subjects which should have been charged to teachers' salaries. Brookline does not pay as liberally, however, to its supervisors in general and to its teachers of special subjects as to its teachers of elementary schools. It would seem, therefore, that the School Committee would be justified in increasing such salaries. The salaries of directors of kindergartens are likewise lower than in other cities, but in this

connection the large cost per pupil of kindergartens shown above must be taken into account.

All in all, it seems from the above considerations that the expenses in which Brookline is low in its distribution of expenses are not serious in character. This fact tends to magnify the deviations upon the other side, to which we now turn.

3. The high cost per pupil and the large proportion of total expense for principals is explained by the high salaries paid. They are higher than in any city in the group except East Orange, in which city the cost per pupil is \$1.63 less, and approximates the salaries paid in the largest cities, where the number of pupils per principal is five or more times as great. This is the most costly feature of the Brookline schools. With the establishment of a Junior High School the need for such large expenditures for this purpose would be considerably lessened. A portion of these amounts saved would be sufficient to secure an assistant superintendent who is expert in efficiency studies in the various educational fields.

4. The salaries and wages to be paid for janitorial service cannot be easily standardized, owing to the peculiar conditions in various communities. The Survey Committee is unable to secure satisfactory comparable data showing salaries and wages paid in other cities. It is clear that Brookline is having to pay more for janitorial service per pupil in average daily attendance than in other cities, but this may be due in part to the small number of pupils in the classroom — how much, we do not know. On the other hand, it seems that the scope of the janitors' duties — entirely within the building — is not so wide as in most cities where they look after the grounds as well. While the janitorial work is, on the whole, well done, it may be fairly questioned whether it could not be done as well by a smaller number of employees closely supervised from the Superintendent's office, whether the janitorial force is most economically distributed among the various buildings and whether fewer men could not be employed during the summer months.

In considering these questions, the decision of the Brookline janitors to waive their privileges under the eight-hour law and to

devote to their work such hours as may prove to be necessary should be given due weight.

5. It is unfortunate that it is not possible to separate the items of (1) heat, (2) light, power and water and (3) janitors' supplies from each other, and to locate definitely the items in which Brookline is high. High costs per pupil for heat because of the climate and large amount of floor space per pupil may be reasonably expected. Costs of light, power and water seem reasonable.

In regard to janitors' supplies, however, the Survey Committee is of the opinion that economies may well be introduced through the purchasing of these supplies under a system of annual contracts without regard to the residences of the bidders, preceded by proper advertising. This is a plan followed in the purchasing of stationery and other instruction supplies, and the fact that this class of expenses is among the lowest in the schools of Brookline indicates the wisdom and practicability of extending this plan to the purchasing of janitors' supplies.

It is believed by the Survey Committee that greater efficiency in the administration of the material side of the schools could be secured by a better organization of the stock room, of the issuance of supplies to the various buildings, and of the utilization of the time of the clerk in charge of buildings. It is impossible in the time that the committee has at its command to go into this phase of administration in sufficient detail to suggest definite methods of reorganization. It therefore suggests to the School Committee that a more detailed study of the organization and procedure in this division of the schools be made at an early day, in order to ascertain the exact conditions and to formulate plans for the most effective administration.

ANALYSIS OF COSTS — SECONDARY SCHOOLS.

TABLE NO. 10.

AVERAGE COST PER PUPIL IN 15 SELECTED CITIES FOR YEARS
1914-15 AND 1915-16 OF VARIOUS CLASSES OF EXPENSES OF
SECONDARY SCHOOLS ARRANGED IN ORDER OF THEIR
AMOUNTS.

(a) SALARIES AND EXPENSES OF SUPERVISORS.		(b) SALARIES AND EXPENSES OF PRINCIPALS.	
1. Wellesley.....	\$12.30*	1. Brookline.....	\$10.19
2. Milton.....	5.55*	2. New Rochelle.....	5.97
3. White Plains.....	5.51	3. Newton.....	5.87
4. Montclair.....	4.68	4. Springfield.....	5.77
5. Brookline.....	3.54	5. Pasadena.....	4.42
6. Yonkers.....	3.20	6. East Orange.....	4.32
7. New Rochelle.....	2.36	7. Madison.....	3.84
8. Madison.....	1.98	8. Berkeley.....	3.70
9. San Diego.....	1.33	9. Yonkers.....	3.65
10. Newton.....	.83	10. San Diego.....	3.47
11. Pasadena.....		11. Colorado Springs.....	3.20
12. Colorado Springs.....		12. White Plains.....	2.57
13. Springfield.....		13. Milton.....	†
14. East Orange.....		14. Wellesley.....	†
15. Berkeley.....		15. Montclair.....	†
Boston.....	1.13	Boston.....	4.50
Los Angeles.....		Los Angeles.....	8.46

* Supervisors' and principals' salaries and expenses combined. †See (a).

(c) SALARIES OF TEACHERS.		(d) TEXTBOOKS.	
1. Pasadena.....	\$94.82	1. White Plains.....	\$4.37
2. San Diego.....	83.24	2. New Rochelle.....	2.93
3. Brookline.....	78.60	3. East Orange.....	2.68
4. Montclair.....	73.16	4. Wellesley.....	2.61
5. Berkeley.....	72.79	5. Yonkers.....	2.60
6. Springfield.....	70.10	6. Brookline.....	2.55
7. East Orange.....	64.95	7. Springfield.....	2.53
8. New Rochelle.....	57.41	8. Montclair.....	2.42
9. Yonkers.....	54.92	9. Colorado Springs.....	1.61
10. Newton.....	53.42	10. Newton.....	1.38
11. White Plains.....	52.68	11. Milton.....	.82
12. Colorado Springs.....	50.58	12. Madison.....	.12
13. Wellesley.....	49.92	13. Pasadena.....	
14. Madison.....	44.30	14. Berkeley.....	
15. Milton.....	36.51	15. San Diego.....	
Boston.....	62.22	Boston.....	3.22
Los Angeles.....	115.18	Los Angeles.....	

(e)

STATIONERY, SUPPLIES AND OTHER
EXPENSES OF INSTRUCTION.

1. San Diego.....	\$8.67
2. East Orange.....	7.82
3. White Plains.....	7.49
4. Wellesley.....	7.30
5. Pasadena.....	7.09
6. Springfield.....	7.00
7. <i>Brookline</i>	6.61
8. New Rochelle.....	6.23
9. Montclair.....	4.86
10. Colorado Springs.....	4.82
11. Milton.....	4.61
12. Newton.....	3.63
13. Madison.....	3.44
14. Berkeley.....	3.30
15. Yonkers.....	2.48
Boston.....	3.61
Los Angeles.....	7.23

(g)

HEAT, LIGHT, WATER, POWER AND
JANITORS' SUPPLIES.

1. White Plains.....	\$6.38
2. Wellesley.....	5.92
3. East Orange.....	5.68
4. Springfield.....	5.54
5. Madison.....	5.54
6. Montclair.....	4.75
7. Milton.....	4.40
8. Colorado Springs.....	4.35
9. New Rochelle.....	4.32
10. Pasadena.....	4.25
11. San Diego.....	3.64
12. <i>Brookline</i>	3.18
13. Newton.....	2.57
14. Yonkers.....	1.62
15. Berkeley.....	1.41
Boston.....	2.71
Los Angeles.....	3.27

(f)

WAGES OF JANITORS.

1. San Diego.....	\$8.67
2. East Orange.....	7.82
3. <i>Brookline</i>	7.76
4. White Plains.....	7.49
5. Wellesley.....	7.30
6. Pasadena.....	7.09
7. Springfield.....	7.00
8. New Rochelle.....	6.23
9. Montclair.....	4.86
10. Colorado Springs.....	4.82
11. Milton.....	4.61
12. Newton.....	3.63
13. Madison.....	3.44
14. Berkeley.....	3.30
15. Yonkers.....	2.48
Boston.....	3.61
Los Angeles.....	7.23

(h)

MAINTENANCE (REPAIRS AND
REPLACEMENT).

1. San Diego.....	\$15.03
2. Pasadena.....	13.20
3. Colorado Springs.....	6.69
4. Springfield.....	4.51
5. Berkeley.....	4.43
6. Newton.....	4.20
7. Yonkers.....	4.06
8. White Plains.....	3.83
9. New Rochelle.....	3.56
10. Milton.....	2.68
11. East Orange.....	2.50
12. <i>Brookline</i>	2.48
13. Madison.....	2.32
14. Wellesley.....	1.85
15. Montclair.....	.82
Boston.....	2.32
Los Angeles.....	7.96

(i)
LIBRARIES.

1. Pasadena.....	\$2.27
2. White Plains.....	2.19
3. San Diego.....	1.74
4. Colorado Springs.....	1.20
5. East Orange.....	1.03
6. Berkeley.....	.92
7. New Rochelle.....	.28
8. Montclair.....	.08
9. Yonkers.....	.06
10. Madison.....	.03
11. Wellesley.....	.03
12. Springfield.....	*
13. Milton.....	
14. Brookline.....	
15. Newton.....	
Boston.....	
Los Angeles.....	2.62

(j)
HEALTH.

1. White Plains.....	\$2.12
2. Madison.....	.55
3. Montclair.....	.52
4. Brookline.....	.49
5. East Orange.....	.42
6. Yonkers.....	.14
7. New Rochelle.....	.10
8. San Diego.....	.08
9. Wellesley.....	.03
10. Springfield.....	*
11. Pasadena.....	
12. Milton.....	
13. Newton.....	
14. Colorado Springs.....	
15. Berkeley.....	
Boston.....	.01
Los Angeles.....	1.58

(k)
MISCELLANEOUS.

1. New Rochelle.....	\$10.05	10. Montclair.....	\$0.06
2. Pasadena.....	3.58	11. Springfield.....	*
3. Madison.....	3.19	12. Newton.....	
4. Brookline.....	1.43	13. Yonkers.....	
5. San Diego.....	1.33	14. Milton.....	
6. Colorado Springs.....	1.30	15. White Plains.....	
7. Wellesley.....	.46		
8. East Orange.....	.41	Boston.....	1.46
9. Berkeley.....	.09	Los Angeles.....	4.42

* Libraries, health, transportation and miscellaneous undivided.

TABLE 11.

PROPORTION OF TOTAL EXPENSES OF SECONDARY SCHOOLS IN 15
SELECTED CITIES EXPENDED FOR EACH CLASS OF EXPENSE;
IN THE YEARS 1914-15 AND 1915-16, ARRANGED IN ORDER
OF THEIR AMOUNTS.

(a)		(b)	
SUPERVISORS' SALARIES AND EXPENSES.		PRINCIPALS' SALARIES AND EXPENSES.	
1. Wellesley.....	14.4	1. <i>Brookline</i>	8.7
2. Milton.....	9.5	2. Newton.....	7.9
3. White Plains.....	6.0	3. New Rochelle.....	6.1
4. Montclair.....	5.0	4. Madison.....	5.7
5. Yonkers.....	4.2	5. Springfield.....	5.4
6. <i>Brookline</i>	3.0	6. Yonkers.....	4.8
7. Madison.....	3.0	7. East Orange.....	4.6
8. New Rochelle.....	2.4	8. Colorado Springs.....	4.2
9. San Diego.....	1.1	9. Berkeley.....	4.1
10. Newton.....	1.1	10. Pasadena.....	3.2
11. Pasadena.....		11. San Diego.....	2.8
12. Springfield.....		12. White Plains.....	2.8
13. East Orange.....		13. Montclair.....	
14. Berkeley.....		14. Wellesley.....	
15. Colorado Springs.....		15. Milton.....	

(c)		(d)	
TEACHERS' SALARIES.		TEXTBOOKS.	
1. Berkeley.....	80.0	1. Pasadena.....	5.4
2. Montclair.....	78.1	2. White Plains.....	4.7
3. Yonkers.....	72.4	3. Yonkers.....	3.4
4. Newton.....	71.8	4. Wellesley.....	3.1
5. East Orange.....	69.5	5. New Rochelle.....	3.0
6. Colorado Springs.....	68.4	6. East Orange.....	2.9
7. Pasadena.....	76.8	7. Montclair.....	2.6
8. <i>Brookline</i>	67.2	8. Springfield.....	2.4
9. San Diego.....	67.1	9. <i>Brookline</i>	2.2
10. Madison.....	66.2	10. Colorado Springs.....	2.1
11. Springfield.....	65.4	11. Newton.....	1.9
12. Milton.....	62.2	12. Milton.....	1.4
13. Wellesley.....	58.5	13. Madison.....	.2
14. New Rochelle.....	58.4	14. San Diego.....	
15. White Plains.....	57.0	15. Berkeley.....	

(e)

STATIONERY AND INSTRUCTION
SUPPLIES.

1. Springfield.....	8.4
2. Milton.....	7.0
3. White Plains.....	5.7
4. Wellesley.....	5.7
5. <i>Brookline</i>	5.6
6. New Rochelle.....	5.3
7. Berkeley.....	4.8
8. Colorado Springs.....	4.2
9. San Diego.....	4.1
10. Wellesley.....	4.0
11. East Orange.....	3.9
12. Newton.....	3.3
13. Montclair.....	2.5
14. Madison.....	2.4
15. Pasadena.....	.7

(g)

HEAT, LIGHT, WATER, POWER AND
JANITORS' SUPPLIES.

1. Madison.....	8.3
2. Milton.....	7.5
3. White Plains.....	6.9
4. Wellesley.....	6.9
5. East Orange.....	6.1
6. Colorado Springs.....	5.7
7. Springfield.....	5.2
8. Montclair.....	5.1
9. New Rochelle.....	4.4
10. Newton.....	3.5
11. Pasadena.....	3.0
12. San Diego.....	2.9
13. <i>Brookline</i>	2.7
14. Yonkers.....	2.1
15. Berkeley.....	1.6

(f)

JANITORS' SALARIES.

1. Wellesley.....	8.6
2. East Orange.....	8.4
3. White Plains.....	8.1
4. Milton.....	7.8
5. San Diego.....	7.0
6. <i>Brookline</i>	6.6
7. Springfield.....	6.5
8. New Rochelle.....	6.3
9. Colorado Springs.....	6.3
10. Montclair.....	5.2
11. Madison.....	5.1
12. Newton.....	4.9
13. Berkeley.....	3.6
14. Yonkers.....	3.3
15. Pasadena.....	2.4

(h)

MAINTENANCE (REPAIRS AND
REPLACEMENT).

1. San Diego.....	12.1
2. Pasadena.....	9.4
3. Colorado Springs.....	8.7
4. Newton.....	5.7
5. Yonkers.....	5.4
6. Berkeley.....	4.9
7. Milton.....	4.6
8. Springfield.....	4.2
9. White Plains.....	4.2
10. New Rochelle.....	3.6
11. Madison.....	3.5
12. East Orange.....	2.7
13. Wellesley.....	2.2
14. <i>Brookline</i>	2.1
15. Montclair.....	.9

(i)

LIBRARIES.

1. White Plains.....	2.4
2. Pasadena.....	1.6
3. Colorado Springs.....	1.6
4. San Diego.....	1.4
5. East Orange.....	1.1
6. Berkeley.....	1.0
7. New Rochelle.....	.3
8. Montclair.....	.1
9. Yonkers.....	.1
10. Wellesley.....	T
11. Madison.....	T
12. Springfield.....	
13. Newton.....	
14. <i>Brookline</i>	
15. Milton.....	

(k)

TRANSPORTATION.

1. San Diego.....	1.6
2. Pasadena.....	
3. <i>Brookline</i>	
4. Springfield.....	
5. New Rochelle.....	
6. Montclair.....	
7. East Orange.....	
8. White Plains.....	
9. Berkeley.....	
10. Yonkers.....	
11. Wellesley.....	
12. Colorado Springs.....	
13. Newton.....	
14. Madison.....	
15. Milton.....	

T=trace.

(j)

HEALTH.

1. White Plains.....	2.3
2. Madison.....	.8
3. San Diego.....	.7
4. Montclair.....	.6
5. East Orange.....	.4
6. <i>Brookline</i>	.4
7. Yonkers.....	.2
8. New Rochelle.....	.1
9. Wellesley.....	T
10. Springfield.....	
11. Pasadena.....	
12. Berkeley.....	
13. Colorado Springs.....	
14. Newton.....	
15. Milton.....	

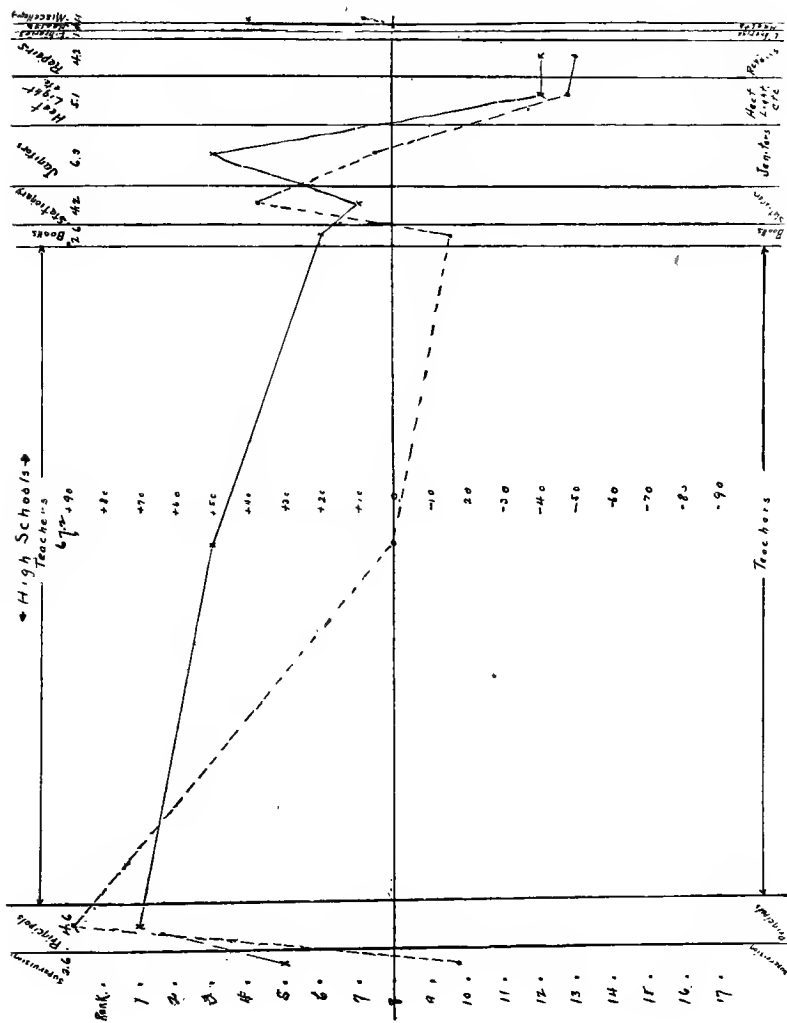
(l)

MISCELLANEOUS.

1. New Rochelle.....	10.2
2. Madison.....	4.8
3. Pasadena.....	2.6
4. Colorado Springs.....	1.7
5. <i>Brookline</i>	1.2
6. San Diego.....	1.1
7. Wellesley.....	.5
8. East Orange.....	.4
9. Montclair.....	.1
10. Berkeley.....	.1
11. Springfield.....	
12. White Plains.....	
13. Yonkers.....	
14. Newton.....	
15. Milton.....	

DIAGRAM 2.

COSTS OF SECONDARY SCHOOLS AND DISTRIBUTION OF EXPENSES THEREOF IN BROOKLINE COMPARED WITH COSTS AND DISTRIBUTION IN 15 SELECTED CITIES.



Tables Nos. 10 and 11 and Diagram 2 furnish for secondary schools the same types of data as those provided for elementary schools in Tables Nos. 7 and 8 and Diagram 1.

On the whole, there is a better distribution of expenses. The high costs of principals are in agreement with the high salaries paid. The organization of a separate secondary school for a small school of 60 or 70 and the appointment of a principal at a salary equivalent to that paid in the largest high schools, instead of creating a new department in the already existing high school and employing a head at \$1000 less, has operated materially to increase the cost at this point. The adoption of the Junior High School organization and the amalgamation of the two high schools would operate to decrease costs here as in the case of the salaries of principals of elementary schools.

While the teachers of the high schools were the best paid of all eastern and middle west cities in the group of 1913, yet relatively to the other expenses they were not receiving a disproportionate share. The low costs for heat, light, etc., in the high school are brought about in part, at least, by the municipal heating plant.

In concluding this portion of the chapter it should be said that while Brookline is making large expenditures for schools and while it is possible for her to introduce certain economies, yet her schools have been administered as economically as most city school systems. The Survey Committee believes it to be its duty to point out ways in which efficiencies of costs may be improved, but in doing this it does not wish to be understood as making any serious criticisms of the administration of the schools.

IS BROOKLINE SPENDING AS LARGE A PROPORTION OF HER EXPENDITURES UPON PUBLIC SCHOOLS AS OTHER CITIES?

But aside from these questions, is Brookline putting as much money into its schools as it should? With the good schools that she has, ought she not to put still more money into them? Is she doing as well by her schools as she is doing for her public undertakings when compared with what other cities of this selected group are doing?

The United States Census Office, the authority on such questions as this, gathers data only for cities having over 30,000 population. But nine of the 17 selected cities fall within this group in its financial statistics for 1915. Comparable data for Brookline are found in the ninth annual report of the Massachusetts Bureau of Statistics. The percentage of the total municipal expenditure spent for schools is as follows:

Berkeley.....	53.5	Yonkers.....	30.8
Pasadena.....	46.3	Brookline.....	23.8
Colorado Springs.....	44.2	Median.....	36.8
East Orange.....	41.5	Per cent for all cities in United	
New Rochelle.....	38.1	States, 50,000-100,000.....	38.5
Newton.....	35.5		
San Diego.....	33.9	Boston.....	35.3
Springfield.....	33.6	Los Angeles.....	35.0

The wealth of Brookline is so large and the number of children enrolled in proportion to her population is so small when compared with other cities that notwithstanding she gives to the support of her schools almost as much as any other city for each pupil, she still gives the least per cent of her total expenditure to schools. According to the group standard, \$150,000 now going for other purposes should go to schools, but if Brookline wished not to lessen the amounts spent in other departments she should increase her schools expenditures by 83 per cent in order to come up to the median, or average, per cent for the selected group; and in order to come up to the median for all cities of the United States of her population group, the school expenditures would have to be doubled.

While Brookline is lowest in the per cent expended for schools, it is first in four of the nine large divisions of expenses — protection of person and property, highways, libraries and recreation. (See Table No. 7 in appendix.)

HOW MUCH BROOKLINE CAN EXPEND UPON ITS SCHOOLS WITHOUT BURDENING ITS PEOPLE MORE THAN OTHER CITIES.

The amount of the burden placed upon a community for the support of its schools depends largely upon the true value of its

taxable wealth, the number of pupils in the schools and the amount of support that comes from sources other than local taxation. Since the Brookline schools are supported practically by local taxation alone, we must assume that no other city will receive such support. In Table No. 12 we have, therefore, first worked out the true valuation of the taxable property in 1912 (columns 2, 3 and 4) and then found the amount of such property that there is back of each pupil to provide his schooling (columns 5 and 6). Into this amount we have then divided the actual expenses of educating each child during the year 1913-14 in order to obtain the rate of tax that would be necessary to furnish the amount required for schooling each pupil. This last figure is the measure of the burden now placed upon the taxable wealth of the people of each city to support the schools.

Thus it is seen that Brookline is now spending upon each pupil in average daily attendance a smaller proportion of its wealth than any other city in the group and probably a smaller proportion than any city in the country. Notwithstanding she now expends more money upon each pupil than any other city, with probably but two exceptions, her taxable wealth is so great that she could double the amount now spent upon each pupil without placing any greater burden upon her taxable property than is now borne by Springfield — the city occupying the middle position in the list — and her school support could be trebled without making so great a burden as that which Yonkers is now bearing. Of the two cities whose expenses per pupil exceed those of Brookline, Pasadena bears a burden twice, and Montclair two and three-fourths times, as heavy.*

* A table in the Report of the Massachusetts State Board of Education for 1913-14 gives the "amount appropriated to the support of public schools for each thousand dollars of valuation" for each of the Massachusetts cities in the selected list as follows:

Springfield.....	4.32	Wellesley.....	2.99
Newton.....	3.99	Milton.....	2.92
Boston.....	3.59	Brookline.....	2.29

While these amounts are smaller than in the table worked out above on data obtained from different sources and by a different method, the relative values are nearly the same. They thus tend to confirm the validity of the previous table as a whole.

TABLE NO. 12.
RELATION OF TRUE VALUATION TO COST PER PUPIL.

<i>City</i>	<i>Assessed Value in Thousands</i>	<i>Basis of Assessments Per Cent of True Value</i>	<i>True Valuation</i>	<i>Average Daily Attendance</i>	<i>True Valuation per Pupil</i>	<i>Cost per Pupil in Average Daily Attendance</i>	<i>Tax in Mills</i>
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1. Yonkers	\$79,841,000	100	\$79,841,000	12,619	\$6,331	\$48.80	7.71
2. East Orange	50,020,000	100	50,020,000	5,476	9,143	69.80	7.64
3. Montclair	40,319,000	100	40,319,000	3,441	*11,720	79.80	6.82
4. Colorado Springs	12,460,000	33	37,758,000	4,487	8,401	53.30	6.35
5. White Plains	18,835	80*	23,544	2,717	8,680	52.40	6.04
6. Berkeley	38,812,000	56	69,307,000	6,419	10,709	62.95	5.88
7. Pasadena	44,937,000	49	91,707,000	6,048	15,016	77.50	5.17
8. Springfield	151,960,000	100	151,960,000	14,837	10,245	52.50	5.15
9. New Rochelle	35,903	60	59,804	4,947	12,017	55.60	4.64
10. Newton	80,132,000	100	80,132,000	6,631	12,086	55.75	4.61
11. Madison	39,133,000	80*	48,916,000	4,398	11,117	49.25	4.44
12. Milton	27,359,000	100	27,359,000	1,296	21,148	67.80	3.21
13. Wellesley	18,592,000	100	18,592,000	904	20,506	60.50	2.95
14. San Diego	49,068,000	31	156,671,000	7,972	19,657	54.80	2.79
15. Brookline	111,053,000	100	111,053,000	3,685	30,136	74.80	2.48

* Estimated.

CHAPTER IV.

BUILDINGS AND EQUIPMENT.

SIZE OF PLANT.

The Brookline public schools are housed in 23 buildings, of which 20 comprise the 12 elementary school plants, one has been discarded, and two hold the high school and the School of Practical Arts. Of these 23 buildings, two were originally erected within the past nine years, six within 19 years, and the remaining 15 were built 20 years or more ago. The Brookline schools, as listed in the Superintendent's annual report, are as follows:

PUBLIC SCHOOL BUILDINGS OF BROOKLINE, MASSACHUSETTS.

<i>School</i>	<i>Rooms</i>	<i>Buildings</i>	<i>Materials</i>	<i>Built or Enlarged</i>
Newton Street	1	1	Wood	1768, 1839
Longwood	4	1	Wood	1864, 1898
Parsons	4	1	Wood	1883
Winthrop*	4	1	Brick	1887
Cabot	4	1	Brick	1888
Lawrence	6	1	Brick, wood	1874, 1885, 1891
Sewall	6	1	Brick	1892
Driscoll	8	1	Brick	1911
Heath	10	1	Brick	1904
Runkle	10	3	Brick	1897, 1901
Devotion	20	3	Brick	1892, 1899, 1914
Pierce	24	2	Brick	1855, 1900, 1905
Lincoln	26	4	Brick	1883, 1888, 1889, 1894, 1898
High	12+	1	Brick	1896, 1916
Manual Tr.	12	1	Brick	1902

* Winthrop school now closed.

SMALL PRIMARY SCHOOLS.

Brookline believes in having its primary schools and kindergartens located near the homes of the children. In accordance with this policy it rarely destroys or abandons a building so

long as enough children can be found living near to fill it. In October, 1915, the school department maintained seven primary buildings each for less than 130 children. The Winthrop building at that time contained only 48 children, and the following fall was ordered closed. The six other buildings are still in use. They are the Sewall, Parsons, Cabot, Longwood, Lincoln primary, and Newton Street Schools. These buildings are uniformly old, poorly planned, badly heated and ventilated, dangerous in case of fire, and ill adapted to modern educational requirements. It is probably true that any suggestion to abandon them and substitute one or more modern buildings in their stead would arouse opposition on the part of mothers who do not wish their children to walk several blocks to school, and of principals whose positions carry greater responsibility in small detached buildings than would be the case in a modern consolidated school.

LOCATION.

It is safe to predict that if a committee of Brookline citizens should draw up a list of the qualifications that a school site should possess, and then compare the present sites with the requirements formulated, they would come to unanimous agreement that not more than one or two of the present school sites met their own requirements. The high school and Practical Arts buildings are close to the steam railroad line. The Sewall and the Lincoln grammar buildings face directly upon a noisy highway and electric car track; while the Lincoln primary is sandwiched between the electric line on one side and the steam railway on the other. The Pierce primary and grammar have insufficient play space. The Heath is located at the foot of a hill on springy ground, so that it is difficult to keep the basement dry. The Sewall, Parsons, Longwood, Lawrence, and Driscoll buildings are all approximately within 1000 feet or less of the town boundary line, so that, instead of each being the center of a natural school district, they are on the edge and draw most of their Brookline population from one side. As has already been mentioned the Winthrop School, located almost exactly on the boundary line, has recently been closed because of a lack of children, while the Longwood is run

practically for the benefit of children living in Boston. Of the 46 Longwood children interviewed in October, 1916, ten lived in Brookline and 36 lived in Boston. Boston prefers to pay tuition for these children rather than erect a new school building of her own. The Devotion School is somewhat nearer the Harvard Avenue car line than is desirable, but the buildings are far enough back on the lot to escape most of the noise; the grounds are ample, and the school well located with respect to the surrounding population. The Runkle School is on high ground, centrally located, with large play spaces, and attractive surroundings. It is excellently placed.

DISTRICTS.

There are no school districts in Brookline. In general, children go to the school nearest their homes, but this is not always the case. Some of the children living on the hill in the Walnut Street region, for example, who are within a short walk of the Sewall, Parsons, and Lincoln Schools actually attend the Pierce or Lawrence, which are at a considerable distance, and across dangerous electric car tracks. Kindergartens are maintained in each of the Sewall, Parsons, and Lincoln Schools, but some of the parents of the district enclosed by these buildings have refused to send their younger children to any of these kindergartens, with the result that two little rooms on the second floor of the Manual Arts High School have been turned into a kindergarten for these children.

Partly as a result of the tendency of people to live in groups of about the same social and economic status, and partly because the absence of school district lines enables parents to decide which school their children shall attend, each of the twelve elementary schools now in use has a distinctive characteristic, so that in talking to teachers and townspeople one hears such expressions as "that's for low-class Irish," "second-generation Irish go there," "mostly Jewish and professional men's children," "offspring of old Brookline families," "only middle-class school in town," "new rich," "our public-private school," etc. Probably no school cares exclusively for one type of children. In two of

the so-called exclusive schools poor children were pointed out as interesting cases, to demonstrate the democratic atmosphere existing. Said one principal, "We have had a coachman's son sitting in the same room with one of the children of his father's employer." It seems to be true, however, that class distinctions are more closely marked between Brookline schools than is generally the case between schools of other American communities.

The establishment of definite school districts and the requirement that all children living within the circumscribed area attend a given school would probably have three definite results: In the first place a few parents might remove their children from the public schools to send them to private schools. Fear of such a result is frequently voiced as an argument against proposed changes. The prophecy is probably well founded. That the loss of these wealthier children would seriously hamper the school system is more open to question.

The second probable result of the establishment of school districts is that, while the differences between schools would still be marked, enough mixing would occur so that the presence of a rich child in a poor school or a poor child in a rich school would not be an occasion for comment. The children themselves would become less conscious of class distinctions.

In the third place, if definite school districts were established the work of each school would probably be considerably strengthened by the increased interest of parents living in the district. If the children living in the Walnut Hill district, for example, went as a matter of course to the Sewall, Parsons, Lincoln grammar, and Lincoln primary, it is highly probable that within a very short time the parents of that section would ask the town for a new building to take the place of the old and undesirable structures now in use. In a similar way for other schools community interest would be focused and responsibility for specific local conditions fixed on definite groups.

From the administrative point of view school districts are desirable because they make for greater efficiency. For example, under the present arrangements whenever the Board of Health sends word to the attendance officer that a school child has

been discovered suffering from contagious disease the latter is obliged to make a special trip to the home of the child before he can discover to which school it belongs and notify the teacher. Were district lines established and enforced the address of the child would be sufficient indication of the school which he attends, and the need for time-consuming house-to-house visits would be eliminated.

In a similar way the school nurse would be able to use her time more effectively under the district system, by spending the entire morning at a given school and the afternoon in visiting parents in the same neighborhood concerning the children whom she had seen in the morning. Since all of these children lived near together she would be able to make many visits with little waste of time. Teachers, also, would find it much easier to enter into the outside lives of their pupils if the latter were all grouped near together with the same community interests.

Perhaps the most important single administrative advantage of the school district plan is that it makes possible an intelligent use of the school census as a basis for providing new buildings and enlarging accommodations in old ones. By noting each year which districts are increasing in child population, and how much, the School Committee may plan months ahead where it will locate new buildings, where additions should be made, and where old buildings should be discarded. It will know how many new teachers will be needed and where they should be assigned. To the educational administrator school districts have few drawbacks and marked advantages. To the citizens of an American community they have social implications as well.

If Brookline wishes to revert towards her democratic atmosphere of earlier days one partial means of doing so would be to establish school districts and confine enrollment at each school to children living within that district. It is entirely possible, however, that Brookline parents do not wish to have their children associate with those of other social and economic ranks. They may feel that democracy within a school system is dangerous or undesirable and that until children reach maturity their playmates should be carefully selected and supervised. If this view

is honestly held, not only by the wealthier parents but by the large majority of Brookline families, any proposition to establish school districts must inevitably meet with overwhelming opposition. Members of the Survey Staff believe, however, that such an aristocratic attitude should not be imputed to Brookline's people without giving them an opportunity clearly to face the issue and decide upon their stand.

UPKEEP OF PLANT.

In 1902, at the suggestion of Superintendent Aldrich, Brookline adopted the policy of appropriating a definite amount of money for the express purpose of renovating one or more schools each year. This policy of systematic and continuous attention to the upkeep of old buildings is one widely adopted in progressive city school systems and is to be commended. While several of the school buildings are of antiquated pattern and unadapted to modern school requirements, all of them are in a good state of repair.

INDOOR AND OUTDOOR UPKEEP.

Responsibility for the maintenance of school buildings does not, however, rest entirely upon the shoulders of the School Department. While little appears in the printed records there exists an understanding whereby the inside of a building belongs to the schools, but the outside belongs to the Park Department and the Selectmen. The following statement was secured from the School Department as its understanding of the arrangement:

"The School Department has nothing to do outside of the four walls of a building.

"The grading and landscape gardening, trimming of shrubs, mowing of grass, etc., is done by the Park Department.

"The school janitors clean up around the doorways and while the Park Department is supposed to shovel off the walks the janitors generally have to open up the paths.

"The care of the outside of the buildings is in the hands of the Selectmen. They repair the roofs, set glass, paint sashes, maintain gutters, conductors, and drains. For instance they paint the outside of a door, and the School Department the inside."

Teachers in the high school are obliged to seek permission from the Park authorities before they can cut a few sprays of ivy for use in school festivals; and when the Survey visitor pointed out the fact that bushes and vines were seriously diminishing the supply of light admitted to several of the classrooms, teachers replied that nothing could be done, since the Park Department did not favor removing the obstructions.

In other words, Brookline regards indoor playgrounds as educational material, outdoor playgrounds as landscapes, and paint on the outside of a schoolhouse door as a general matter of town business. In 1901 the School Department requested that responsibility for the entire upkeep of school property, outdoors as well as in, be vested in the school authorities. While not a matter of overwhelming importance, it is obvious that constant petty annoyances must arise through this present state of divided responsibility. All school property exists for educational purposes and its care should rest upon the shoulders of the educational authorities. The town should early take steps towards this end.

JANITORS AND THEIR WORK.

With two exceptions the janitors employed in the Brookline system impressed the Survey visitor as being competent, diligent, and keenly interested in the welfare of the schools under their charge. They have evidently been selected with great care. The relation between janitor, principal, teachers, and children seems especially friendly, and constitutes a real and important educational asset.

There is very little supervision; each janitor arranges his own work schedule and so long as the school work is properly done he receives few suggestions from any one else.

The "Rules and Regulations of the School Committee" (1908) contain specific directions for cleaning and caring for school buildings, but in at least several instances janitors were unaware that such rules existed, and regularly departed from them in practice. For example, the rules require that classrooms be washed once a month; but in most of the schools floors are oiled instead of washed — which is probably a better practice. The

laissez faire method of janitorial administration in the small system of Brookline has resulted in the development of a group of men feeling personal responsibility for their work, and capable of independent action. This happy result has probably been rendered possible first by the smallness of the system, which makes the work of each man conspicuous, and second by the care exercised in selecting from among applicants for the position.

In order that full advantage may be reaped from the excellent features now existing, it is desirable that there be closer acquaintanceship between the men. In several cases janitors did not know the names of men in other buildings; methods used by one man were new to another, and valuable experiences were not shared. It is suggested that the formation of an organization of Brookline janitors for the purpose of studying janitorial problems would materially benefit both the schools and the men themselves. One of the first tasks of such an organization might well be the revision of the 1908 printed schedule for janitor service in the light of the best current practice.

Of the 14 janitors five have been employed by the system for more than 20 years. The shortest term is two years, and the average 15. Salaries range from \$988 (not including \$120 for part-time service at the Newton Street School) to \$1352, with an average of \$1114. There is no definite basis for amount of salary or number of assistants provided for each janitor. In some cases janitors feel that they are not sufficiently provided with helpers, and that their working hours, especially during the winter months, are too long. It is probably true that some of the janitors work harder than others and receive less pay, and that some janitors should not be expected to carry on their work without an additional helper, but specific recommendations along this line must wait until a more careful study of the situation can be made.

Any schedule of payment should take into account the professional training required, floor area and type of heating and ventilating apparatus within the building, assign different weights to these elements according to their relative importance, and base salary awards upon the total thus found. To make such

a schedule is a difficult problem. Much of the information needed could best be secured by a committee chosen from among the janitors themselves; and the activities of such a committee would probably result in valuable suggestions to the School Board and an increased understanding of the complexities of the problem on the part of the force.

Janitors are paid by the year, but are not required to do any work during the summer months, other than see to it that the buildings are ready for occupancy by September. In most well organized school systems janitors are busily employed during the long vacation in painting fire escapes and fences, repairing school grounds, whitewashing basements, cleaning the insides of boilers, and the like. The following sections quoted from the "Rules of the Cleveland Board of Education" are typical of the better practice:

"The custodian shall devote his entire time to the building or buildings under his charge. He shall report at the building or buildings every day except Sunday or national legal holidays not later than 7.45 A.M. and remain at the building until 4.45 P.M., eastern time. . . . During vacation periods the custodian may be absent from the building for lunch between 12 and 1 o'clock P.M."

"Two weeks' vacation with full pay shall be allowed all custodians in each calendar year. . . ."

"At the end of every school year the custodian shall take an inventory of all serviceable supplies and equipment on blanks furnished for this purpose. . . ."

"Pupils' desks must be washed both inside and out, including the iron work, during summer vacation."

"During the summer vacation the basement must be thoroughly cleaned throughout and all walls and ceilings white-washed, excepting in cases where pressed brick, glazed material, or metal work is used. Special attention must be given to the toilet rooms, closets, and fresh air chambers."

"The custodian must see that all iron and wood fences, storm and outhouses, outside doors of the buildings and screens

in outside basement windows are painted during the summer vacation, if necessary. Write the general foreman, if in doubt."

"The custodian shall make such small repairs to heating and ventilating systems, lights, etc., as he may be able to do. These repairs are the same in kind as any engineer would be expected to make in any plant he might be operating. In case repairs are necessary to machinery, motors, boilers, lights, etc., beyond his ability, he shall immediately report the same in writing to the chief custodian. . . ."

"During vacation he shall clean, oil, and adjust all clocks."

"At the close of the school year in June the custodian must remove all ashes, etc., from boiler tubes, smoke pipes, combustion chambers, base of chimneys, and from all fixtures. Boilers must be thoroughly cleaned and everything put in shape ready for inspection by the inspector of boilers. . . ."

"The custodian must remove all packings from piston rods, valve stem of engine and pumps, take off cylinder and steam chest covers, clean cylinders, valve seats, and piston rods, and oil them with cylinder oil. All pumps must be drained and water shut off. He must remove belt from engines, motors, and shaftings, clean and store same in a dry place for the summer. . . ."

"The custodian must see that all furnaces, stack heaters, stoves, and all pipes and connections are thoroughly cleaned. Stoves shall be polished and all black iron work of boiler fronts, coils in plenum chambers, furnaces, and stack heaters shall be painted."

The long summer vacation offers opportunity for valuable service on the part of the school janitor. This report suggests that definite hours of work, and specified tasks, together with two or more weeks of paid vacation, be established for all janitors during the summer months.

ELEMENTARY SCHOOLS.

LIGHTING.

Proportion of Glass to Floor Area.

It is a generally accepted standard in schoolhouse construction that the window glass area for each schoolroom should be from one-fifth to one-fourth the floor area. In southern communities it may even be one-sixth, but in northern States, where there is less strong sunlight, the larger proportion is necessary if eyestrain is to be avoided. Every classroom in Brookline was visited, and careful measurements were taken of 20 representative cases. The diagram on page 93 shows the proportion of window glass area to floor area in each of rooms studied.

About one-half of the sunlight entering a room is admitted through the upper third of the window. Rooms such as are found on the second floor of the Pierce Grammar School, where the main windows are less than six feet high, instead of the standard eight feet, with a semicircular window above, not only furnish an insufficient gross glass area but cut off the upper corners and obstruct light by added frames at the top of the room where light is most important. Where these semicircles are permanently covered with shades which cannot be raised or lowered the reduction of effective light is still more serious. Rounded windows, green shades fixed at the top, masonry piers, and vines outside combine with near-by trees, hills, and buildings to cut off light from rooms which are already dark because of insufficient glass area. Even in her newest buildings Brookline does not reach the best standards for lighting and most of her old buildings are seriously deficient. As may be seen by the accompanying diagram, of the elementary classrooms where glass area and floor area were compared three-fourths are distinctly below standard; and one-half so low as to render their continued use seriously open to question.

[illegible]

PROPORTION GLASS AREA IS OF FLOOR AREA IN EACH OF
TWENTY-ONE BROOKLINE CLASSROOMS

Front Lighting.

There are several cases of front lighting in the Brookline schools. At the Newton Street windows are on all four sides. Two rooms in the Sewall School are so arranged that windows are at the left and front. This arrangement has been made because of a belief on the part of the school authorities that light must always fall over the left shoulder, and that it is better for windows to be directly in front than for light to be admitted from the right. From this view the members of the Survey Staff must strongly differ. It is true that when people are writing light should fall over the left shoulder in order that a shadow may not be cast upon the page; but the strain incident to the use of pen and paper with light from the right is far less injurious and far less constant than the strain caused by the glare of sunlight pouring directly into the eyes of children during the entire working day. If the two rooms in the Sewall building are to be continued in use the seats should be turned so that windows will be at the right and rear of the children.

Another form of front lighting which causes undesirable eye-strain is found in the Runkle and Lawrence Schools. In each of these schools a class is held in one end of the assembly room. Screens or folding doors cut off most of the light from windows at the other end of the hall, but space is usually left through which front glare is able to penetrate. More careful attention should be paid to drawing shades and adjusting screens or doors in order to remove this source of strain.

Windows Too Near Front.

A common error in schoolhouse construction which is very hard to avoid is the placing of windows along the side of the room too near the front blackboard. The modern school architect aims (although he does not always succeed) to group his windows close together and well away from the front of the room. The reason is that windows on the side wall near the front may sometimes furnish almost as harmful a glare for the children's eyes as though the window were actually in the front wall. In addi-

tion such windows usually cast light on the front blackboard in such a way that writing is obscured or confused. The present tendency is to leave a blank wall space for at least nine feet from the front of the room, and to bring the rows of desks forward so that windows and desks shall be on the same line. Ideally there should be no glass area extending beyond the front row of children. Actually almost every classroom in Brookline breaks this rule. A projection of one or two feet is in fact avoided only by the most skillful planning, but in several cases the situation is more serious. Measurements were taken for 26 classrooms as is shown in the following table:

DISTANCE WHICH WINDOWS IN SIDE WALL PROJECT BEYOND FRONT DESKS IN TWENTY-SIX BROOKLINE CLASSROOMS.

<i>Classroom</i>	<i>Front Desk to Wall</i>	<i>Front Window to Wall</i>	<i>Projection of Window Beyond Desk</i>
Devotion primary	8.0 feet	6.5 feet	1.5 feet
Cabot	10.0 feet	8.0 feet	2.0 feet
Runkle primary	8.0 feet	5.8 feet	2.2 feet
Lincoln grammar	8.0 feet	5.5 feet	2.5 feet
Lawrence	10.0 feet	7.0 feet	3.0 feet
Longwood	11.0 feet	8.0 feet	3.0 feet
Pierce primary	11.0 feet	5.8 feet	5.2 feet
Pierce grammar	10.0 feet	4.7 feet	5.3 feet
Devotion grammar	11.0 feet	5.0 feet	6.0 feet
Heath	12.5 feet	6.0 feet	6.5 feet
Pierce primary	11.0 feet	4.0 feet	7.0 feet
Pierce primary	10.5 feet	3.4 feet	7.1 feet
Devotion primary	10.6 feet	3.0 feet	7.6 feet
Pierce primary	11.0 feet	3.0 feet	8.0 feet
Devotion grammar	10.5 feet	2.3 feet	8.2 feet
Lincoln grammar	10.0 feet	1.5 feet	8.5 feet
Pierce primary	12.0 feet	3.5 feet	8.5 feet
Pierce grammar	11.0 feet	1.8 feet	9.2 feet
Driscoll	12.0 feet	2.0 feet	10.0 feet
Driscoll	13.0 feet	2.0 feet	11.0 feet
Pierce grammar	12.7 feet	1.5 feet	11.2 feet
Pierce grammar	11.7 feet	.5 feet	11.2 feet
Devotion primary	13.0 feet	1.3 feet	11.7 feet
Cabot	14.5 feet	1.5 feet	13.0 feet
Sewall	14.5 feet	1.2 feet	13.3 feet
Sewall	17.5 feet	1.2 feet	16.3 feet

It is difficult to suggest any satisfactory remedy for the poor lighting conditions here indicated. In most cases the

window area of the room is not sufficient to justify covering windows near the front with dark shades. Light-colored adjustable shades will give some relief. In primary rooms desks are often placed well to the rear in order to leave a cleared play space at the front. One of the most obvious methods of lessening eye-strain from windows near the front wall would be to move all classroom furniture as near the front as it conveniently can be placed, leaving the clear floor area at the rear of the room. This report suggests that in existing classrooms furniture be rearranged so that the first row of desks shall be not more than eight feet from the front wall; and that in planning new buildings for the future architects be requested to group windows close together and as far towards the rear of the room as is possible while still securing the necessary glass area.

Unilateral Lighting.

It is over 20 years since unilateral lighting was first accepted as a standard in schoolhouse construction. So universally has it become an accepted theory that cross lights in the classroom are injurious to the eyes that there is practically no discussion of the question in current educational writings other than textbooks. Brookline has accepted the theory, but does not practice it in the case of some classrooms in the newer buildings. In the Heath, Driscoll, and Devotion Grammar Schools for example, there are several classrooms in which light comes from the left only, and each of the new rooms added to the old primary building of the Pierce School has unilateral lighting, but in the case of the three other buildings just mentioned, although they are the three elementary buildings most recently erected (one of them not yet three years old), the unilateral principle is adhered to only in certain rooms, while in others light is admitted in the old-fashioned way. There is not a public school in Brookline which is lighted throughout on the modern principle.

Direct Sunlight.

A fact of which Brookline may well be proud is that she has no sunless classroom. All rooms in which children study

are so placed that some time during the day they receive the direct rays of the sun. The sun is one of the most effective germicidal agents known, and exposing a room to the sun's rays is an effective means of preventing epidemics, such as colds and other diseases, which are spread through nasal discharge.

It is necessary, however, while planning rooms so that they will receive sunlight during some portion of the day, to see to it that direct sunlight does not enter during hours when children are seated at their desks. Direct rays produce a glare which causes eyestrain. The discomfort of trying to work under the direct rays of the sun is so great that most teachers at once pull down the curtains of the windows on the sunny side. As most of these curtains in the Brookline schools are of sage green the room is at once seriously darkened.

If all classroom windows faced towards the west children would be able to work in the morning in a clear light without sunlight and yet the entire room could be thrown open to the direct rays of the sun during the long afternoon. In Brookline most of the buildings are set at an angle, with the corners of the building pointing toward the four points of the compass. In a few cases such as Lincoln Grammar School, all classrooms face towards the south; but in most of the buildings the southeast. In 100 classrooms examined in Brookline 76, or over three-fourths, are exposed to the heat and glare of direct sunlight during the entire morning session.

Shades.

With insufficient glass area and direct sunlight during a large part of the morning session, the question of window shades assumes large importance. Most of the shades now in use in the Brookline schools are a light sage green color. In about two-thirds of the cases they are fixed at the top, and in about one-third of the cases they are of the adjustable type so that they can be raised or lowered to cover any portion of the window desired. In a few cases, as in the Cabot School, the shades roll from top and bottom of the window and meet at the center. At the Devotion grammar, where windows swing on pivots,

two shades at each window unroll from the center towards the top and bottom. .

If light is to be allowed to enter, while at the same time direct sunbeams are shut out, window shades must be of ecru or some other light color which will not darken the room. In the second place they must be adjustable so that it will not be necessary to cover the entire window in order to cut off a small area of direct sunlight. Shades fixed at top and bottom and made to draw towards each other are better than a single shade, but not so satisfactory as the regular adjustable shades already in use in many schools in Brookline.

In the third place teachers must be taught to adjust the adjustable shade. On one sunny morning when schools were in session a member of the Survey Staff noted ten classrooms equipped with adjustable shades. In nine the shades were drawn from the top of the window in the usual way, while in only one case they were adjusted to keep out the sunlight and yet leave the rest of the window covered.

Summary and Recommendations for Elementary Schools.

1. The window glass area in any classroom in the northern part of the United States should equal from one-fifth to one-fourth the floor area. In Brookline three-fourths of the rooms show an insufficient glass area and one-half are seriously below standard.

2. In two rooms at the Sewall School windows are at the front instead of the rear of the children. The seats in these rooms should be turned, so as to face in the opposite direction. Greater care should be taken to avoid front glare in the assembly hall classes of the Runkle and Lawrence Schools.

3. In most of the Brookline classrooms front glare is admitted by windows on the side wall which extend beyond the front seats. It is urged that furniture be moved forward so that the front row of desks shall be not more than eight feet from the front wall, and whatever clear space is left shall be at the rear of the room instead of at the front.

4. Even when the newest buildings are included there is not a public school in Brookline which is lighted throughout on the unilateral plan. In erecting new buildings the unilateral principle should be rigidly adhered to.

5. Of 100 classrooms examined in Brookline, 76 are exposed to direct sunlight during the morning hours. Because teachers draw the shades to exclude glare these classrooms are frequently made too dark. In erecting new buildings, especially if the one session plan is continued, effort should be made to turn as many classrooms as possible towards the west, so that they may receive direct sunlight when classes are not in session.

6. Light-colored adjustable shades should be placed in all classrooms and teachers should be taught how to use them. This recommendation is especially important for the 76 classrooms which receive direct sunlight during the morning session.

BLACKBOARDS.

When a child stands in front of a blackboard he should find a clear writing space extending for several inches below the level of his eyes. It should not be necessary for him to reach above his head in order to place his arithmetic example upon the board. Moreover, care must be taken not to make the boards so wide that they cover large portions of the wall space. If they are black or dark green they absorb large quantities of light. It is desirable, therefore, that while there should be plenty of space below the level of the child's eyes there should be only blackboard space enough above his head to give room for a few lines of writing by teacher. With these two elements in mind — the necessity for making boards low enough to write on, and for keeping them sufficiently narrow so that they will not absorb too much light — the following standards have been worked out and widely adopted for classroom purposes:

<i>Grade</i>	<i>Distance from Floor</i>	<i>Width of Board</i>
1 and 2	24 inches	28 inches
3 and 4	27 inches	30 inches
5 and 6	30 inches	32 inches
Upper grammar	32 inches	36 inches
High schools	36 inches	40 inches

Blackboard Heights.

Practically all the blackboards in Brookline are placed too high for the children's use. Measurements were taken of 13 rooms occupied by first, second, or third grade; the results are as follows:

27 inches from the floor.....	3 cases
28 inches from the floor.....	2 cases
30 inches from the floor.....	5 cases
32 inches from the floor.....	1 case
33 inches from the floor.....	2 cases

In 12 grammar grades the corresponding measurements were as follows:

30 inches from the floor.....	1 case
32 inches from the floor.....	1 case
33 inches from the floor.....	1 case
34 inches from the floor.....	3 cases
36 inches from the floor.....	4 cases
39 inches from the floor.....	1 case
40 inches from the floor.....	1 case

That is, four-fifths of all the classrooms studied have blackboards placed too high for the children's use. For all buildings which are to be retained in service blackboards should be lowered at once.

Blackboard Widths.

According to the generally accepted standard, no primary school blackboard should be over 30 inches wide and no grammar school blackboard should be over a yard wide. In every elementary school where blackboards were measured they were wider than 40 inches — the standard for high schools. Boards ranged from 42 inches to eight and a half feet, while the medium or half-way measure fell at 48 inches. When this excessive width of light-absorbing blackboard is thought of in connection with the inadequate glass area of the windows it becomes a serious problem. There are two ways of dealing with it without removing the boards: One is to attach shades on rollers similar

to window shades above all the blackboards and have it a fixed rule that these shades shall be pulled down when boards are not in use. Another method would be permanently to cover the upper portion of the blackboard with some light-colored material of the same tint as the schoolroom walls. Plaster boards should be removed instead of covered.

Most of the old schools are equipped with blackboards of plaster upon wooden lath or brick. In the newer schools blackboards are of slate. Slate is so much more satisfactory for schoolroom use than plaster blackboards that it should be used not only for new buildings but also to replace plaster blackboards in the old buildings. The Cabot, Sewall and Lincoln primary buildings are especially in need of such replacement. At the Lincoln primary the plaster blackboard has been placed upon a brick foundation in front of the chimney. In spite of refinishing this blackboard becomes cracked and chipped; and it is practically impossible to keep it in repair. Every building which is to be continued in use should be equipped with good-quality slate boards properly placed.

Summary and Recommendations.

1. Four-fifths of all the blackboards measured in the Brookline elementary schools are placed so high on the walls that pupils cannot conveniently use them.

2. All of them are wider than the standard for high school classes.

3. Blackboards in most of the old buildings are of plaster on brick or wooden lath.

It is strongly urged that in every building which is to be continued in use, (a) slate boards which are too high be lowered; (b) the upper portion of slate boards which are too wide be covered with light-colored shades; and (c) all plaster boards be replaced by new ones of good-quality slate.

Visitors from European countries remark upon the constant use which our teachers make of the wall blackboard. Hardly an exercise is conducted in which the blackboard does not play a part. If Brookline expects her teachers to do good work she

should certainly provide them with tools of the best quality; and among these modern blackboards hold an important place.

SEATING.

For many years Brookline has been committed to the policy of providing adjustable furniture for classrooms. The carrying out of this policy, however, has not been uniform. At the present time about two-thirds of the chairs used in the Brookline schools are adjustable and one-third are not adjustable. At such buildings as the Driscoll, Runkle, Devotion, and Heath a good showing is made, but on the other hand certain rooms in the Pierce, Lincoln, Cabot, Sewall, Parsons, and Lawrence Schools show a surprisingly large number of old-fashioned non-adjustable seats. Furniture has been fastened to the floor with care.

It is a standard requirement that the front edge of the desk should overlap the front edge of the seat by about one and one half inches. If the overlapping is much greater than this the child is crowded too close to the desk. If it is much less the desk is too far removed and the child is forced to lean forward. In Brookline with very encouraging uniformity this slight overlapping of chair and desk was found in practically all schools.

Some of the children of the Runkle School are now provided with chairs and desks which have been designed especially for use in Brookline. In the opinion of the Survey visitor this furniture is admirably adapted to present schoolroom activities. Perhaps its most striking feature from the point of view of school administration is that both chair and desk can be raised or lowered rapidly and without effort while the child is actually seated at his place. The services of a janitor are not needed for this process of adjustment. The work can be done by the teacher with the aid of an older boy in a remarkably brief time and with satisfactory results. Moreover, the adjustable parts are so arranged that they can be locked in place.

This mechanical feature of the chairs and desks now used by some of the Runkle children is of very real practical importance. At present the Brookline janitors are expected to do all the work of adjusting seats and desks at the beginning of the fall term.

In a large school this may become a tedious task. It is no easy matter for a large man to work over the screws and bolts of the forty tiny chairs and forty tiny desks of a primary schoolroom. When he faces the prospect of adjusting all the furniture in the building within a few weeks at the beginning of the fall term he may be excused for looking forward to the prospect with considerable dread. Furniture that can be adjusted without the aid of a janitor would greatly simplify the task of starting classes in the fall term.

One class in the Runkle and one class in the Sewall School have adopted an interesting seating arrangement. Seats and chairs are placed one behind the other in straight rows, but each set is turned on its base so that children can face squarely toward the teacher without turning in their chairs. Desks in the center rows are usually parallel with the front blackboard but those on the side are turned slightly in. The teachers of both classes where furniture is arranged in this way strongly prefer it to the usual method. In earlier sections this Survey has already recommended many changes in the placing of school furniture. It has suggested that front sunlight be avoided by turning chairs around to face the other direction; that in places where side windows are too near the front wall all chairs be moved forward in order to cut off as much as may be of the front glare. It has also urged the necessity of replacing old-fashioned non-adjustable furniture with chairs and desks of the modern type. If these suggestions are carried out it would be well worth while to give teachers in the rooms where changes are being made an opportunity to visit the two classes at Runkle and Sewall Schools, and where teachers are in favor to experiment in these classrooms by replacing the furniture on the angle rather than the parallel plan.

Summary and Recommendations.

1. About one-third of the seats and desks in Brookline elementary schools are of the old-fashioned non-adjustable type. Where chairs are adjustable a considerable period elapses at the

beginning of the fall term before janitors find time to make all the adjustments necessary.

The important thing about chairs and desks is that they be adapted to the needs of children who sit in them. If they are adjustable a sufficient variety of sizes should be introduced into every classroom so that short children may be seated in low chairs and tall children in high ones. Theoretically Brookline believes in this principle. In practice she ought to follow it.

2. Care has evidently been exercised in securing the correct amount of overlapping between chair and desk.

3. The furniture now used in certain of the Runkle classrooms is of an excellent type. If the expense is not prohibitive it would be desirable to secure more furniture of this type to replace the old-type furniture now in use.

4. Two Brookline classes have adopted a seating plan whereby every child may face squarely toward the teacher without turning on his chair. It is suggested that where seating changes are made other teachers be given the opportunity to try out this method with their own classes.

TOILETS.

Location.

In all the elementary school buildings except the Sewall and the Newton Street toilet rooms are situated in the basement. The room for boys is usually at one end of the building and the room for girls at the other, and in most cases these rooms are reached by separate stairways from the floors above.

Labels.

In 23 out of the 26 cases noted in elementary schools the only way of determining for which sex the room was intended was by opening the door and examining the fixtures within. The absence of labels does not cause difficulties for children who have long been in the school, but in the case of new children or visitors serious embarrassment may result through entering the wrong toilet room. Since this matter of labeling is inexpensive and easily attended to it is here recommended that signs clearly

indicating for which sex the toilets are intended be attached to the outer doors of all toilet rooms at an early date.

Lighting of Toilets.

As would be expected in a system where most of the buildings are old, toilet rooms are generally poorly lighted. Where basements are well below the ground level and windows are small and few it is almost impossible to secure a satisfactory amount of light and sunshine within the toilet room. In six cases most of the light comes from the north so that sunshine never enters. A favorite building plan in the past has been to make the toilet room long and narrow with a window at one end. The boys' toilet in the Devotion Primary School is lighted by one small window. In the Lincoln annex in the boys' toilet there are two narrow windows which become banked with snow in the winter and leave the room very dark. In the girls' toilet in the Longwood School there is one window which is three-quarters beneath ground and of little use for lighting purposes. The boys' toilet in the Runkle Grammar School is so long and narrow that it cannot be successfully illuminated by outside light. Similar conditions will be found in several of the other buildings. In most cases where the toilet rooms are long and narrow lighting is greatly interfered with by the common habit of placing fixtures down the center in such a way that those nearest the windows cut off light from all of those beyond.

Ventilation.

The commonest plan for ventilating toilets in the Brookline schools is the foul air flue, which leads directly from the toilet room into the outer air. The theory is that since toilet rooms are usually heated warm air will rise through the flue and carry odors with it; while cool air will come through doors and windows to take its place. In some cases a hot air, water, or steam pipe has been passed through this flue in an effort to stimulate the circulation of air. In the Devotion School toilet rooms are connected with the regular heating and ventilating apparatus. For most of the other buildings, however, they present a separate problem.

In each visit to a school building the janitor was asked to show the Surveyor how the toilet room was ventilated. In almost every case he was unable to tell until he had himself investigated in order to see whether there was a flue connecting with the room. In one or two cases, however, the janitor was well aware of existing conditions; for example, at the Cabot School the janitor reported that on winter nights he was obliged to close the cold air flue connecting with the boys' toilet, because if he did not the pipes would freeze. Instead of carrying air out from the building the foul air flue admits cold air to the basement.

That the air in toilet rooms is not more impure than it is is due to two factors: first, the janitors as a group are constantly on the alert to detect odor and remove its source where possible, and second, the children of Brookline apparently have been carefully trained in the use of toilet facilities. One of the chief sources of disagreeable odors in toilet rooms is the chemical action of uric acid upon concrete or cement floors. Most of the floors in Brookline are of this type, but it is noticeable to the visitor from outside that there is comparatively little discoloration. Were children careless in this matter serious conditions might easily be established which would be very difficult to remedy. Even as it is in some of the older buildings such as the Lincoln, Longwood, Sewall, and Parsons Schools unpleasant odors are distinctly noticeable, although in at least the first two buildings deodorants are regularly in use.

Toilet Room Floors.

As has already been stated, it is a commonly accepted principle that toilet floors should not be made of concrete or cement because of the unpleasant odor which speedily arises from uric acid when it comes in combination with this material. Probably the best material for toilet room floors is asphalt. In one or two cases this has been used in Brookline. Not only is asphalt desirable because of its cleanliness but it is also impervious to moisture. Where cellars are well below the ground in old buildings the floors are usually damp. For example, we find in Brookline that all through the basement of the Lincoln annex plaster falls

from the walls and ceilings; the floors are always damp, there is a bad odor, and deodorants must be used. In the Longwood School the floors of the girls' toilet are always damp and odors may be detected in the upper rooms. In the Parsons School the floor is always damp; and at the Heath and Lawrence, although the toilet rooms are in better condition, the floors of the store-rooms are seriously damp much of the time.

Equipment.

From the point of view of number of seats and urinals per child enrolled, Brookline is more generous than are most communities. Using the figures for October, 1915, published in the latest Superintendent's report, there is one urinal for every 13 boys, one seat for every 16 boys and one seat for every 11 girls. This is a remarkably generous showing. It is usually held that if there is a supply of one urinal for every 25 boys, one seat for every 20 boys, and one seat for every 12 girls, schools so equipped may be rated as excellent upon this point. Brookline schools make an even better showing than the standard here cited.

The type of toilet equipment provided, however, is not so satisfactory. With the exception of the Devotion School, where both porcelain and slate are used, urinals are made of slate and are usually flushed by a pierced iron pipe through which water is sprayed upon the surface below. These sprays vary in effectiveness. At the Lincoln School in certain of the toilet rooms the spray cannot be turned on at full force because it splashes. In the Cabot School the holes have become filled with rust so that the spraying is interfered with. Slate is a durable and impervious material for urinals and is certainly much better than the painted iron so frequently found in other school systems. The pierced pipe, however, is a very unsatisfactory method of water flushing. In most schools where it is now used it should be replaced by an overflow pipe or some other flushing device which will provide a constant and equal distribution of water over the entire urinal surface.

The closets in the Brookline schools are in wooden stalls with individual doors. Usually each has a separate flush ar-

rangement. In most cases the flushing mechanism is operated by hand, but in a few schools, where very young or poor children attend, the chain is attached to the door, so that opening the door automatically flushes the toilet. Seats are usually of wood with closed fronts. The closets are noticeably free from defacing writing or drawing. Wood is an undesirable material for closet partitions and seats, since it readily absorbs moisture and holds dirt, and is not particularly easy to clean.

In general it may be said that Brookline provides a bountiful supply of not very good toilets, badly housed. The individual flush and separate doors are features frequently omitted in other school systems and are deserving of commendation. It is also worth noting that all toilets are supplied with toilet paper.

Washing Facilities.

Not enough care has been given to facilities for washing the hands after leaving the toilet. Out of 31 toilet rooms examined, 16, or about half, provide water, paper towels and soap, and therefore encourage children to wash their hands regularly after using the toilet. In eight cases water is available but is not used for washing purposes, and towels and soap are not provided. In seven others there are no washing facilities of any kind.

Newton Street School.

Toilet facilities at the Newton Street School are distinctly bad, and if the school is to continue in use should immediately be changed. There are two closets, one for boys and one for girls. Each is what is known as a dry closet, that is, it consists of a wooden seat with a wooden cover placed over a hole in the ground. There is a sewer directly in front of the building but no connection has yet been made with the toilet. Shovels of earth thrown into the pit serve to eliminate odors. One closet has a ventilating hole over the door covered with a wide mesh screen. This screen is so coarse, however, that it does not guard from the entrance of flies or mosquitoes. In the other toilet there is no regular form of ventilation. To go to the toilet at the Newton

Street School children are obliged to walk outdoors so that they are exposed to the wet in rainy weather. If this school is to be retained in active service modern toilets flushed with water should be installed.

Summary and Recommendations.

1. Almost none of the toilets in the elementary schools is labeled to show for which sex it is intended. It is recommended that such signs be installed at once.

2. Most of the toilet rooms are dark and unpleasant. This results from windows opening to the north, too small glass area, shrubs or snow outside the window, rooms which are too long and narrow, or the placing of equipment so that it cuts off the light from parts of the room beyond. Some of these conditions are found even in the newest buildings. Little can be done to remedy them; but care should be taken to avoid their repetition.

3. The fact that the air of toilet rooms in Brookline is not strikingly unpleasant is due not to care in construction but rather to good janitor service and well-taught children.

4. Most of the floors are of concrete. They should be made of asphalt. In toilet rooms asphalt resists the action of uric acid. In all parts of the basement it keeps out dampness. Certain schools in Brookline continually suffer from damp basement floors.

5. Brookline provides a great deal of fairly poor equipment, badly placed in unpleasant rooms.

6. In about half of the Brookline schools children are required to leave the toilet room without washing their hands. Hot water and soap in every toilet room is an effective means of preventing the spread of certain very dangerous diseases. Brookline children should not be deprived of this protection.

7. If the Newton Street School is to be continued in use it should be provided with running water, and with a modern water flush toilet, connected with the sewer, and properly screened from flies.

SPECIAL ROOMS.

The Janitor's Room.

The janitor does not fare very well in most of the Brookline schools. Only in the newest buildings is he provided with comfortable quarters where he may spend those hours of the day when he is not actively engaged at work in other parts of the building. In old buildings all that is actually accorded to the janitor is a private toilet with sometimes a means for washing face and hands. He must spend his day in basements which are ordinarily dark, ill-smelling, and depressing in atmosphere. The janitor has probably longer hours than any one else employed in the school system. He is expected to be on hand all day long. His work is such that there are many periods of great activity and intervening periods of comparative idleness. Moreover, where systems are efficiently conducted, there is a surprising amount of clerical work, such as the checking of supplies, etc., which must be taken care of by the janitor.

If he is to do his work properly he should be provided with a private office, well lighted, comfortably furnished, with telephonic communication with the principal's office. There should be a desk at which he may work, with drawers for the filing of official documents. There should be at least one really comfortable chair. A toilet room should open from the office, and hot and cold water should be provided in abundance. The basements of old buildings are difficult to remodel, but by using ingenuity it should be possible at comparatively small expense to provide an office for the janitor. Money and thought invested in this way would bring notable returns in the shape of increased efficiency on the part of the janitorial staff.

Medical Inspection Room.

The Devotion School is the only place where medical inspection has been taken with sufficient seriousness so that a special room has been set apart for that purpose. The dispensary or, as it is frequently called, the nurse's room at the Devotion School is excellently planned and equipped. Medical inspection work

in the other schools is carried on in empty corners. At the Heath School what is probably a fairly satisfactory arrangement has been secured by using the dressing room opening off the stage in the auditorium as a medical inspection room. At most of the other buildings, however, quarters are distinctly inferior. At the Pierce Grammar School medical inspection is carried on in the school library. In several schools the teacher's room is used. Sometimes children are merely called out into the hall. At the Lincoln a discarded shop room in the annex serves this purpose. In most cases it is necessary to carry around from room to room all the medical inspection supplies, such as records, tongue depressors, etc.

Every medical inspection room should have attached to it a small toilet room with washing facilities. There should be a special cabinet for medical supplies, a couch upon which sick children may be laid, and a set of scales. This room should be particularly well lighted. If medical inspection in Brookline is to take the place which it should take as one of the most important school activities special rooms must be set aside in every building for the use of nurses and doctors.

Teachers' and Principals' Rooms.

Brookline has usually made very good provision for the comfort of her teachers and principals. Teachers' rooms usually include toilet and washroom, a couch, chairs, table, and either a gas or electric plate where food may be heated. Only in the Sewall, Lincoln grammar, Lincoln primary, and Lawrence Schools are the teachers really poorly housed. At the Sewall School there is no special toilet for the teachers. The teachers' room at the Lincoln grammar is bare and unattractive. At the Lincoln primary the teachers' room is positively unpleasant. If a rug, screen, curtains, steamer rug, pillow, and tablecloth were added the appearance of the room might be greatly improved. Since there is no artificial light of any kind in the building it has been impossible to install any means of heating food. Teachers carry their own Thermos bottles. Considering the good conditions generally found in Brookline, the appearance of the

teachers' room at the Lincoln primary is a distinct shock to the visitor.

Similar conditions exist at the Lawrence School. The teachers' room is furnished by three chairs and an old desk. It is bare and unattractive. There is no place in the building except in the principal's office where a sick teacher or child may lie down.

The principal's office in the Lawrence is also exceedingly bare and uninviting. In most of the other buildings the principals are well taken care of.

Summary and Recommendations.

1. It is recommended that a special office be prepared in the basement of each school for the use of the janitor.

2. Special rooms devoted to the medical inspection service should be provided in all but the Heath and Devotion Schools.

3. Most of the teachers' rooms are well equipped and attractive, but those at the Sewall, Lincoln grammar, Lincoln primary, and Lawrence Schools are distinctly inferior. If these buildings were to be continued in use the teachers' rooms would require many changes. Even for temporary service an attempt should be made to increase their facilities.

4. Offices for principals are usually comfortable and well equipped. The Lawrence School offers a striking exception.

HEATING AND VENTILATION.

Heating Apparatus.

As is true in all but the newest of school systems the heating apparatus of the various Brookline buildings shows great variety. It is unfortunately true that there is hardly a city in any of our northern States in which the heating and ventilating of school buildings is satisfactorily cared for; and the most serious element of the whole situation is that as yet very few constructive suggestions can be made as to methods of improving existing conditions. It is probably true that within the next few years great advances will be made towards solving this problem, and

it is urged that Brookline remain on the alert to discover what is being done and take advantage of new suggestions.

In Brookline the heating apparatus ranges all the way from one unjacketed stove in the Newton Street School to an exceedingly complicated heating and ventilating plant at the Devotion School. In three cases heat is furnished by a furnace supplemented by a hot water heater (or, as is the case in the Longwood, a hot water heater which has been turned into a steam heater) for warming corridors and toilets. In the other buildings heat is furnished by steam boilers. Direct heat is furnished by steam pipes around the walls of the room, and indirect heat by means of air taken from outside and slightly warmed before being admitted to the classroom.

Ventilation.

Ventilation in the Brookline buildings is usually by means of open windows and fresh air flues. In most cases within the air flue there is a steam pipe or radiator which somewhat warms the air before it goes into the classroom. In six of the buildings there are fans which pump air from outside into the classroom. At the Devotion School air is forced in from outdoors, and strained, cleaned, and moistened before it is admitted to the classrooms. At the Lincoln annex the fan is used only in coldest weather when it is impossible to heat the building in any other way. It stands in the center of the floor unprotected by sheltering walls, and instead of drawing in air fresh from outdoors it collects air from all parts of the basement and sends it up into the rooms. At the Lawrence and Parsons Schools it is also possible to force air drawn from the fuel bin, toilet, and other parts of the basement up into the classroom, when the fan is going.

Air Ducts.

Every building is provided with some sort of a chamber or duct which is supposed to carry fresh air from outdoors into the building. In a few cases, as at the Devotion School, these ducts are placed well above the level of the ground, but in most of the schools ducts are so located as readily to admit flying dirt,

decayed vegetable matter, and the like. The position of the air intake was noted in the case of 12 of the Brookline buildings. The results were as follows:

10 feet above ground.	2 cases
4 feet above ground.	3 cases
2½ feet above ground.	1 case
Just clearing the ground.	3 cases
Below ground level.	3 cases

That is, of the 12 cases examined six were either below the level of the ground or just at the ground line. Every time a strong draft sucks in cold air from outside it is apt to carry with it particles of dust and dirt and force them up into the rooms where children are sitting. In one or two schools an effort has been made to filter incoming air by means of fine cheesecloth screens, but these precautions, which should be taken everywhere, are found only in the better schools where air inlets are high and well protected. Inlets in the old schools, which are at or below ground level, are usually closed by an iron grill which serves chiefly as a means of preventing small bugs from crawling into the pipe.

At the Pierce Grammar School air is taken from the street level. It is then drawn over the tops of the boilers, and no proper separation has been made between the air ducts and the boiler. The incoming fresh air is mixed with gas from leaky joints, soot, etc., and is carried up to the classroom for children to breathe. The heating plant of the Pierce School is in need of alterations.

Measurements of Heat.

Every room in Brookline is supposed to be equipped with a thermometer, and the teachers are required to send in monthly reports of the daily temperatures in their rooms. Except in those buildings which are equipped with thermostats there is no way for the janitor to tell how warm different rooms are without visiting them in person. There are no thermographs in the Brookline schools. The thermograph is a device which registers in the janitor's office the amount of heat in each of the classrooms in his building. It is comparatively inexpensive and

simple to install, and greatly simplifies the janitor's task during the cold weather, when changes in heat are frequently necessary.

Classrooms should never be allowed to show a temperature higher than 68° F. In many places where air is properly moistened this standard can be lowered to 65 degrees with noticeable increase in comfort; 68 degrees, however, is the accepted temperature for classrooms in general. As was stated in an earlier paragraph, every classroom is furnished with a thermometer and the teachers are required to send in reports of temperatures taken at 8.30 and 11 in the morning. Such a regulation keeps the teachers interested in the question of heat and ventilation. It is unfortunate that many of the teachers have come to believe, and with reason, that no one ever reads these reports after they are sent.

Careful scrutiny of the temperature reports would undoubtedly lead to radical changes in school procedure. For example, the following records were found recorded in three of the Lincoln School rooms.

LINCOLN PRIMARY.

<i>December</i>	<i>8.30</i>	<i>11</i>
4	72	76
5	80	76
6	76	74
7	73	72
8	78	76
4	70	68
5	74	70
6	76	72
7	74	70.
8	72	70

LINCOLN GRAMMAR.

<i>December</i>	<i>8.30</i>	<i>11</i>
4	68	76
5	70	75
6	77	77
7	69	74
8	68	76

Undoubtedly these figures do not represent conditions in all school buildings. They are probably extreme cases, although they were not selected for that reason. In both of the Lincoln buildings classrooms face towards the south and receive direct

sunlight most of the morning. It is difficult to keep the temperatures as low as they should be kept; but such extremes as are noted in the three tables given above should have been the basis for immediate investigation.

Care should be taken in placing the classroom thermometer to see that it is not subjected to special factors which do not represent conditions in the rooms. For example, at the Lawrence School in one of the second-floor rooms on December 7 the thermometer showed a temperature of 68° F., but the thermometer on the sling psychrometer measured only 63 degrees. The classroom thermometer hangs on the wall just beside the crack in the door which leads into the hallway. Temperature in the hallway was very much higher than in the room and it seems certain that the thermometer was registering not the real classroom heat but the heat of the air which was coming through the crack in the door. The best location for a classroom thermometer is the center of the room suspended by a string from the ceiling.

Humidity.

In the Devotion, Pierce primary, Pierce grammar and Heath Schools special apparatus has been erected to provide a sufficient amount of moisture in the air. At the Lawrence School there is no special humidifying apparatus, but steam jets are kept going in most of the rooms. These devices are installed for the purpose of preventing the classroom air from becoming too dry. When air is heated it expands and thereby increases its capacity for moisture. Unless it is artificially supplied this hot dry air tends to absorb the moisture upon the skin and mucous membrane surfaces of people within the room. It has been apparently successfully demonstrated that one of the common conditions which lead to "catching cold" is the air of a hot room which, by absorbing moisture from the mucous membrane of nose and throat, makes these parts flushed and sensitive and renders them easily affected by germs.

In order to determine the amount of humidity in Brookline classrooms tests were made by means of the sling psychrometer. The results are shown in the following table.

PSYCHROMETER READINGS IN 18 BROOKLINE CLASSROOMS

<i>School</i>	<i>1916 December</i>	<i>Barometer</i>	<i>Dry Bulb</i>	<i>Wet Bulb</i>	<i>Difference</i>	<i>Mean outdoor Relative Humidity</i>	<i>Indoor Relative Humidity</i>
Lincoln primary	8	30.0	75	54	21	80	21
Parsons	7	29.8	65	48	17	72	24
Devotion intermediate	8	30.0	69	52	17	80	28
Lincoln primary	8	30.0	69	52	17	80	28
Devotion grammar	8	30.0	70	53	17	80	29
Lawrence	7	29.8	63	48	15	72	29
Parsons*	7	29.8	54	43	11	72	29
Lawrence	7	29.8	67	51	16	72	30
Lincoln primary	8	30.0	65	50	15	80	31
Lincoln annex	8	30.0	68	52	16	80	31
Devotion grammar	8	30.0	69	53	16	80	32
Devotion primary	8	30.0	66	51	15	80	32
Devotion grammar	8	30.0	67	52	15	80	33
Lincoln primary	8	30.0	70	54	16	80	33
Lincoln grammar	8	30.0	70	54	16	80	33
Devotion primary	8	30.0	68	54	15	80	34
Lawrence	7	29.8	64	50	14	72	34
Devotion intermediate	8	30.0	66	52	14	80	36

* Parsons open air class.

It will be noted here that the relative humidity of the classrooms on the days tested ranges from 21 in the Lincoln Primary School to 36 in the Devotion Intermediate School, with an average humidity of 31. Even at the Devotion School, which is equipped with an elaborate humidifying apparatus, it is amazing to note the great difference on a given day between the mean relative humidity of the outside air as compared with the relative humidity of the classroom air. All of these measurements were taken on days when the sun was shining brightly. Measurements taken on one day during rainy weather were omitted from this calculation because conditions were not typical.

An interesting element is the humidity of the open air class at the Parsons School, which is only 29 as compared with a mean relative humidity of 72 for the same day outdoors. In the open air class all the windows and doors were open when the tests were made. A considerable amount of hot air was being forced into the room from furnaces below, and there was a very strong draft from the hallway into the room. The air of the open air classroom was more than twice as dry as that outdoors. The explanation probably is the air in the open air classroom was coming from other parts of the building and rushing out the window. When the anemometer used to test air currents was held in the open doorway which led from the stairs going down to the toilet room it registered a very strong incoming rush of air being drawn from the basements and toilet rooms into the open air classroom.

Air Currents.

It is usually held that at least 2000 cubic feet of air per child per hour should be admitted to every classroom. In Brookline some measurements of air inflow and outflow were taken in the elementary and high schools by means of what is known as the anemometer, which measures the velocity of air currents. In the elementary schools findings range from 480 cubic feet per child per hour to 1440 cubic feet per child per hour of air being admitted through the fresh air inlet of each classroom studied. The outlets of the same rooms showed a variation of from 1020 cubic feet to 3660 cubic feet per child per hour.

The apparent discrepancy between the small amount of air being admitted through the fresh air flue and the large amount being expelled through the foul air flue may largely be accounted for by the fact that in the 18 rooms examined 15 had open windows and of the others three had at least one door open into the hallway. These rooms secured most of their heat from direct heating by steam pipes and most of their fresh air from outdoors or from the corridors of the school building. Comparatively small amounts were admitted through the fresh air inlet. In several cases there was no perceptible draft at the inlet; in others warm air was admitted in gusts blowing violently

for a few seconds and then becoming still. In one room in the Lincoln annex a back draft in the foul air outlet sent cold air into the room in a strong current. A more careful study of conditions in the Lincoln building will probably reveal that when the wind is in a certain direction the foul air outlet actually serves as an inlet for cold outdoor air. Certain rooms in the building are proverbially hard to heat, and it is not unlikely that the explanation for this condition will be found in the action of the wind on the foul air flue.

Summary and Recommendations.

1. The heating and ventilating apparatus in the Brookline schools shows wide variety, including stove, furnace, hot water, and steam heating; and window, cold air, warm air, and plenum fan ventilation.

2. Several of the schools have fans to aid in ventilation. Some of these when in use force air from the toilet rooms into the upper parts of the building. All fans should be installed in fan chambers, directly connected with the outer air, and cut off from the rest of the basement.

3. In all new buildings openings to air chambers should be placed well above the ground level. In old buildings cheese-cloth should be stretched across the openings to strain out dirt. This cloth should be changed at frequent intervals.

4. The heating and ventilating plant at the Pierce Grammar School should be examined by a competent heating engineer and changes made in accordance with his suggestions.

5. A thermograph system — whereby the temperature of each room is automatically recorded in the janitor's office — should be placed in every school where thermostats are not already installed.

6. Unless the temperature records reported daily by school teachers are to be used as the basis for constructive work by janitors and the central office they should not be gathered. If excessive temperatures are maintained there is little advantage in the fact that records are made of them. Such records can be useful, but they require being studied as well as being collected.

7. The air of Brookline classrooms is uniformly too dry. No constructive suggestions can at present be given as to means of remedying this situation, but it is urged that a study be made of different ventilating systems in order to ascertain what plan should be followed in future buildings.

8. More attention should be paid to the direction of air currents. Where rooms are hard to heat back drafts in foul air flues should be looked for. Where windows and doors are open in classrooms teachers should be taught how to discover whether the air is coming in the windows and going out the door, or coming in the door and going out the windows. Better supervision and more intelligent instruction to teachers are needed to improve the hygienic conditions of schoolrooms.

FIRE RISKS.

Basements.

Most school fires start in the basement. If, therefore, basements can be rendered thoroughly fireproof, probably the most important single step has been taken towards safeguarding the lives of the children. In the standard schoolhouse such as is now being built in progressive communities, the heating plant is completely isolated. Furnaces or boilers are surrounded by fireproof ceilings, walls, and doors. These doors are of metal or metal covered, closely fitted in the surrounding frame, and hung with springs so that they remain closed. Not only is the ceiling directly above the heating plant of fireproof material, but usually the entire basement is separated from the rooms above it by fireproof floors. Fuel bins are also isolated, and are usually built underground beyond the main foundation walls of the building. They are completely fireproof and closed with fireproof doors, or metal slides. Storage rooms in the basement are of fireproof construction and special care is taken to see that oil, paint, cotton waste, etc., are so placed that they cannot readily become a source of danger.

In many modern buildings automatic sprinklers have been installed in storage rooms and heating rooms, so that in case of

fire an alarm will automatically be given and the blaze drenched with water. The cellar stairs are of fireproof construction. No wood is used in their building and they are separated from the upper floors by fireproof doors which automatically swing closed. Steam pipes and other heat pipes are carefully protected so that they will not come in contact with wooden partitions. Electric lights are used instead of gas or kerosene. Gas meters are carefully installed so that there may be no danger of leaking joints and consequent explosions.

In the preceding paragraphs brief mention has been made of these salient features which are recognized by school men as necessary if a building is to be thoroughly protected from basement fires. In Brookline there are a few schools in which most of these provisions have been carried out. While not ideal in every way the heating plants of the Driscoll, Runkle, Devotion, Pierce grammar and Heath Schools may all be ranked as fairly well protected.

On the other hand, the heating plants in the basements of the Lincoln primary, Lincoln annex, Lincoln grammar, Longwood, Cabot, Sewall, and Lawrence Schools all present fire risks of a sort which should not be tolerated.

Lawrence.

At the Lawrence, which is a half brick, half wood building with a shingle roof, fuel is separated from the boilers by wooden partitions, the ceiling directly above the boiler is of plaster on wire lath, but other portions of the ceiling are not so protected. There are no doors to the boiler room. The main stairway is of wood and not properly separated from the rest of the building.

Parsons.

At the Parsons School, which is also a combination of brick and wood, neither of the furnaces is separated from the rest of the basement. Fuel is in the same room with the furnace in each case and is held in place by wooden partitions. At one end of the building when the coal bin is well filled the heat pipes rest directly on the coal. Above both furnaces is a sheet of metal which extends for a short area. The basement stairs in the Parsons School are unusually treacherous. They are narrow,

poorly lighted, and contain many dangerous corners and wedge-shaped steps, so that the smaller children are unable to descend them without the help of a teacher or nurse. Connection between the various parts of the basement is peculiarly complicated and in time of panic or fire children might easily be trapped there.

Although the Parsons School is a bad fire risk it has two redeeming features — first, comparatively few children are enrolled, and second, the janitor being aware of the danger is particularly careful to keep fuel away from the furnace door, to store oil, waste and other inflammable material properly, and to prevent the accumulation of furniture. One of the best examples of schoolhouse-keeping observed during the October period of the inspection was in the basement of the Parsons School. It is needed there.

Sewall.

In the Sewall School the only attempt to isolate the heating plant from the rest of the building is wire lath and plaster in the ceiling directly above the boiler. There are no doors or partitions even of wood to separate the boiler from the rest of the basement. The fuel supply is close to the boiler. Cellar stairs are of wood.

Cabot.

At the Cabot School the main stairway is directly over the boiler. The main coal supply is on the floor of the basement, not isolated by walls or doors. A small supply of coal is kept near the boiler. A wooden partition eight feet from the boiler with a wooden door closes off the furnace room from the rest of the cellar. The stairs leading to the basement are of wood and have three bad wedge-shaped steps at the top, which render them extremely unsafe for the use of primary children. The Cabot School is of old-fashioned construction and would burn easily.

Longwood.

At the Longwood School a wooden coal bin is within six feet of the furnace door. The cellar ceiling is not fireproof and the smoke pipe from the furnace runs from within two feet to

within 10 inches of the ceiling. A rather hurried inspection made by the Survey visitor disclosed no evidence of extra fire-proofing directly above the boiler or between the smoke pipe and the ceiling. Two unprotected steam pipes pass through small holes in wooden partitions near enough to become a source of fire. Wooden stairs lead from the first floor to the basement, and are not closed off from the rest of the building by doors. The building is overrun with rats.

Lincoln Grammar.

The most dangerous basement conditions in the Brookline public schools were found in the Lincoln buildings. In the Lincoln Grammar School the basement ceiling, apparently not fireproof, is within two feet of the top of the boiler with pipes running between the two. The boiler room is separated from the rest of the basement by a metal covered door, but space is left open directly above. There is no door to the fuel room. The hot smoke pipe from the boiler at the time of the October inspection was actually resting upon the coal. It passes six inches above a wooden partition and two feet below a lath and plaster ceiling. The boiler is situated directly under one of the main stairways of the building. At the September visit a pile of coke was directly under the wooden basement stairs. In the basement storeroom the oil supply and the supply of cotton waste were stored side by side. This storeroom is provided with brick walls, a wooden floor, and wooden doors. Wooden furniture was piled in the same room with the other inflammable material.

Lincoln Annex.

In the Lincoln annex, at the September inspection, a coal pile rested against the wooden toilet partition. There is no door to the fuel room. The ceiling is apparently of laths and plaster, and is unprotected. A pile of coke rested against a single board partition beyond which are wooden stairs. This pile still remained at the time of the October inspection. A smoke pipe runs close to the ceiling. It is protected from the ceiling by a small sheet

of metal in one place, but along most of its length is unprotected. Steam pipes run through roughly cut holes in wooden partitions, and at places actually touched the wood. Unprotected steam pipes run over piles of coal, in some places nearly touching them. Piles of old furniture were neatly stored in the basement.

Lincoln Primary.

In the Lincoln Primary School heat is furnished by two furnaces, one under each half of the building. In the western end the furnace is within 18 inches of an unprotected ceiling. Coal filled the rest of the room at the September inspection, and was held back a few feet from the furnace door by wooden planks. Unprotected furnace pipes passed directly over it, nearly touching. There is no door to the furnace room. In the eastern wing the coal supply was banked up within two feet of the furnace door. Unprotected furnace pipes run within a few inches of the ceiling, with piles of lumber directly below. A metal sheet is placed above the smoke pipe, but the other pipes are not so protected. A heat pipe runs just far enough above a wooden air intake to allow the Surveyor's hand to slip in flat between the two. Furniture and coal were stored side by side in this same room near the furnace. Ash cans were close to the wood supply. The basement of the Lincoln Primary School is so dark that it is almost impossible to see one's way. There is no means of artificial lighting. The stairs are of wood, closed by wooden doors. The basement is so dark that it was only through a sudden fall over an unexpected obstruction that the Survey visitor discovered a pile of coal directly under the front stairs, actually touching the wooden stair tread. Old furniture is stored under the back stairway.

Summary.

The basements of the Lawrence, Parsons, Sewall, Cabot, Longwood, Lincoln grammar, Lincoln annex and Lincoln primary buildings present conditions so serious that they call for immediate and drastic action.

The "Cyclopedia of Fire Prevention and Insurance," Vol. I, page 67, states that in the United States we average 10 schools burned up or partially destroyed every week in the year. Brookline may escape for an indefinite time. It is for the citizens of Brookline to decide how far they shall take chances with the lives of their children.

ATTICS.

The most approved plan in building schoolhouses does away with the pitched roof entirely and substitutes a flat roof, such as is now commonly found in apartment houses, hotels, etc. The flat roof of the schoolhouse is generally utilized for open air gymnasiums, playrooms, open air classes or roof gardens. Where for any reason it seems desirable to have a pitched roof, the greatest care is taken to prevent possible fire risk by cutting off all drafts. In buildings of the old-fashioned type of construction, fires which started in the basement or in the lower stories were apt to spread quickly between the outer and inner walls until they reached the attic. Large open spaces in the attic, especially when combined with loose-fitting windows or cupolas, acted as flues to suck flames up toward the top of the building.

Where the old-style wooden lath construction has given way to wire lath, and floors have been properly fire stopped, the danger that fires will spread between walls has become greatly lessened. Nevertheless, large, open attic spaces, because of their tendency to create drafts within the building and because of the likelihood that they will be used as storage places for combustible material, are from the point of view of fire protection undesirable.

Where attics exist they should be closed off from the rest of the building by fireproof doors which are kept securely locked at all times. If the attic space is large, partitions should be placed across it, so as to cut it into two or three separate rooms. No furniture, paper or other storage material of any kind should be allowed in the school attic.

There are no buildings in the Brookline system which are of the modern flat-roofed type. In the cases of the Runkle and Devotion Schools, which are built on the cottage plan of three-

buildings for each plant, the reason given for erecting the newest building with a pitched roof was that it was necessary to make each new building conform to the general architectural type of the group. This argument, however, does not hold for the Driscoll School, built in 1911, standing by itself and provided with a large attic. While it is frequently claimed that the large attic is a remnant of early school architecture, it is interesting to note that in Brookline this is not the case. Schools such as the Lawrence, Lincoln, Parsons and Cabot, which are among the older buildings of Brookline, have comparatively small and low attics, some of which cannot be reached by the ordinary stairway. In Brookline the large attics seem to be a modern tendency which is distinctly undesirable.

Large attics are found at the Driscoll, Runkle, Devotion, Longwood and Sewall Schools. In the first three, fire risk is materially lessened by the use of metal lath in building. Each of these, however, shows large open spaces, and in all five plants there is a certain amount of furniture stored away in the attic. In each case the furniture is of comparatively small amount and neatly stored. It should, however, be removed. In the Longwood School there is no good place to store even supplies such as books, paper, etc. Shelves have been placed at the foot of the attic stairs and much of the material is placed in the attic itself. The use of any school attic for storage purposes, unless the space is properly fireproofed, is distinctly dangerous and should not be allowed. A rule should also be passed prohibiting the leaving open of attic doors during school hours. In visiting Brookline schools, it was unusual to find an attic door locked.

Summary and Recommendations.

There are three suggestions to make concerning the attics of Brookline school buildings:

1. Keep them empty.
2. Keep them locked.
3. Never build another.

CORRIDORS.

It is safe to lay down the general proposition that the main corridors in school buildings should never be less than 11 feet wide, nor more than 18. If they are narrower than 11 feet, they make it difficult for classes to move rapidly about. If they are wider than 18 feet, the cubic foot cost of the building is greatly and unnecessarily increased. The exact number of feet must depend upon the number of classrooms which empty into that corridor. If wardrobes or other pieces of equipment must be placed in the hall, the width of corridors should be increased. It is highly undesirable, however, to make any such provision for corridor equipment. Every drinking fountain, wardrobe, showcase, or piece of statuary which projects out into the hallway becomes a possible source of danger in time of panic, because it may serve to impede the direct line of escape for marching children. Where statuary, drinking fountains and the like are needed they should be placed in especially prepared niches and set flush with the main wall.

In most of the Brookline schools wardrobes for children's wraps have been placed in the hallways. In a few cases, such as at the Driscoll, Devotion grammar, Pierce primary, Lawrence and Parsons Schools, regular cloakrooms have been built adjoining classrooms, but in most of the other schools wooden walls or wire screens have been placed in the corridors and the enclosed space used for wardrobe purposes.

At the Heath and Runkle Schools these hall wardrobes are placed in alcoves set off from the main corridor in such a way that they do not interfere seriously with direct passage. Even in these schools if there were a panic the hall wardrobes might lead to serious results because, as has been repeatedly demonstrated, children who become frightened are apt to rush from the line and seek to secure their coats and wraps before going outdoors. Where wardrobes are on the line of march it is sometimes difficult to control this hysterical tendency.

The wardrobe danger at Heath and Runkle, however, is far less serious than in the cases of several of the other schools, where the closed-off spaces in the hall have seriously encroached upon

the available exit space, and where spaces are often left between the wardrobes in such a way that if there were a panic weak children would be apt to be pushed into the spaces by the rush of their stronger classmates.

At the Cabot School partitions which formerly enclosed wardrobes have been removed, and hooks left along the wall. Had this task been properly completed the Cabot corridors would be amply wide for every need. Unfortunately, on each floor cupboards have been left at the center of one side, projecting out into the hall for a distance of six feet. These cupboards are a serious source of danger and should be speedily removed.

The following table indicates, in the case of 12 Brookline buildings for which exact measurements were taken, the available free width of corridor space; that is, the amount of space left free for the passage of children after the width of obstructions has been deducted.

<i>School</i>	<i>Corridor Width Free from Obstructions</i>
Lincoln annex.	5 feet
Sewall.	5 feet 6 inches
Runkle primary.	6 feet
Lincoln grammar.	7 feet
Devotion primary.	7 feet 6 inches
Devotion intermediate.	7 feet 10 inches
Longwood.	8 feet
Cabot.	8 feet 3 inches
Heath.	10 feet
Pierce primary.	10 feet 4 inches
Devotion grammar.	11 feet 9 inches
Driscoll.	12 feet

In large buildings it is exceedingly desirable to build corridors in such a way that by means of vertical partitions and doors the building may be cut into two or more units, completely separated from each other by fireproof stops. This makes it possible in case of fire in one end of the building rapidly to transfer children to other parts and to shut off the dangerous portion from the rest of the schoolhouse so that smoke and flames cannot for a considerable time escape. An excellent example of vertical fire stoppings

may be found at the Heath School in Brookline. By means of fireproof doors the Heath School may be cut into three separate portions. Stairs are situated near each end, so that in case of fire one end may be completely shut off and children led to safety by means of the other stairway. Vertical fire stopping is a comparatively inexpensive and exceedingly effective means of providing for safe exit in case of fire.

Summary and Recommendations.

In many of the Brookline schools wardrobes are built in the main hallway. They seriously decrease the available corridor space, and in time of fire might easily cause loss of life. Of 12 buildings studied, only two have free corridor space equal to the minimum allowed in buildings which accord with modern standards.

It is strongly urged that all wardrobes be either entirely removed from the halls, or else made narrower, so as to secure at least 11 feet of clear corridor width wherever possible.

AUDITORIUMS.

To any one studying the dangers of fire in public school buildings, the location and plan of the auditorium assume great importance, because when this room is in use it means that a large number of people are confined within a comparatively small space. If an alarm of fire is given they usually try to leave with the utmost rapidity and by the same exit. Where public entertainments are held and visitors are allowed in the auditorium the danger becomes even more serious, because of the fact that visitors are not acquainted with the general plan of the building and thus may find it more difficult to find exit in case of an alarm. So important has the matter of securing rapid exit from the auditorium become that reputable school architects are everywhere laying down the proposition that auditoriums must be located on the ground floor and, moreover, must be provided with exits leading directly outdoors so that the auditorium may be cleared without causing the audience to pass through other parts of the building.

The only school in Brookline where the auditorium is located on the first floor is the Devotion Grammar School. The exit doors of this auditorium open directly upon the main corridor opposite a small flight of stairs which leads to the front doorway. From the point of view of fire and panic protection the building could have been improved by placing one or two exit doors at the end of the auditorium plainly marked, provided with panic bolts, and leading directly to the outer air. Because it is on the first floor, however, and because the main entrance is directly opposite the auditorium entrance, the Devotion auditorium probably presents little real danger.

This is not true of some of the other auditoriums in Brookline. At the Runkle, Heath and Lawrence Schools the auditorium is on the second floor instead of on the first. Indeed, at the Lawrence School it might almost be called on the third floor, since at the back of the building the basement is entirely above the ground level. At the Driscoll School the second floor corridor has been made into a temporary auditorium. At the Pierce and Lincoln Schools the auditorium is on the third floor. At the Heath School the fact that there are fireproof vertical partitions on every floor, which make it possible to shut off one part of the building if fire is discovered there, renders the use of a second floor auditorium considerably safer than would otherwise be the case. With the possible exception of the Heath School, no one of the auditoriums here listed is properly provided with safe and ample exits in case of an alarm of fire.

It is apparently not the custom in Brookline to make full use of the auditorium, and regrettable as this may be from the point of view of teaching method, from the point of view of fire protection it may be laid down as a safe proposition that so long as auditoriums above the first floor remain unprovided with special fireproof exits their use during more than a small portion of the day or by very large groups of people should be discouraged.

Summary and Recommendations.

1. The Devotion grammar is the only school in Brookline where the auditorium is properly located on the ground floor.

2. Auditoriums in new buildings should be located on the first floor and provided with direct exits.

3. The Runkle, Lawrence, Pierce and Lincoln Schools should either avoid using the auditoriums for large or frequent gatherings, or else provide outside fireproof stairways of good stair type so that the hall may be emptied without using the main part of the building.

4. Care should be taken at the Driscoll building to leave a clear space down the second floor corridor, so that chairs will not hinder classes from rapidly reaching the stairway. The use of a corridor for assembly exercises is not to be commended.

COOKING ROOMS.

At the Devotion, Lincoln and Pierce Grammar Schools the Cooking room is on the top floor. At the Devotion School the coal stove is properly set on a tile base, while the wall behind is covered with tile; but on the same floor is a fuel bin for the use of the Domestic Science classes which is composed of wood and is entirely unprotected from the wooden floor, wall and rafters of the rest of the attic. At the Pierce School most of the attic is finished, but there are certain unfinished rooms used for storage purposes. The stove in the Domestic Science room is set on a tile base, but the wall two feet behind is not protected. A wooden bin for the storage of coal and wood used for the Domestic classes is built upon the wooden floor of the attic, and is without any protection.

Recommendations.

All wooden bins now in use should be replaced by fireproof fuel bins with self-closing doors or covers. Otherwise a match carelessly thrown may result in a conflagration.

STAIRS.

Properly constructed stairways rank only second in importance to a properly isolated heating plant. Isolation of the heating plant prevents fires from spreading. Properly built stairways insure safe exit for children in case of panic or fire. In

an emergency, when people are frightened, they try to escape by the stairways they commonly use. At Collinwood, O., where, in 1908, 173 children and two teachers lost their lives, fire escapes were attached to the building, but when the smoke came rolling up the open stairway teachers and children forgot about the fire escapes because they were not in the habit of using them. Instead they tried to rush down the stairways, and because the stairways were wrongly built and led to exits which were improperly planned, a horrible tragedy resulted.

Properly built stairs make the best fire escapes, and if stairways actually follow the most approved standards outside fire escapes are not necessary. Stairs should be placed at opposite ends of the building, so that if one is blocked exit can be had by means of the other. In large buildings stairways should be added in proportion to the number of children housed.

Fireproof, Panic-Proof Stairs.

If a stairway is to be fireproof and panic-proof, it should be built in a stair tower of its own, with fireproof walls and doors cutting it off from the rest of the building. Doors should be made of metal and wire glass and arranged to swing closed when not actually in use. Treads, risers and supports should all be of fireproof material. The stairway should lead from the ground floor to the top of the building and open directly to the outer air at the foot.

Stairways should be not less than four feet or more than five feet wide. This width makes it possible for two lines of children to pass down the stairways at the same time, one on each side, without leaving room for a third line of children to break through down the center. Handrails should be placed on each side and continue unbroken up the stairways and around the landings. Risers should be six and a half or seven inches high and treads about 13 inches deep. No wedge steps should be allowed anywhere in the school building. Landings should be flat and unbroken by steps. No statues or potted plants should be allowed on these landings; nor should there be corners into which smaller children might be pushed. Instead, landings should be

rounded so that in case of a panic children would be carried on with the others instead of being crushed to one side.

The space underneath the stairway must be kept clear. There should be no storage closets for books or janitor's supplies, under the stairway, nor should the space be utilized for hanging children's wraps. Stairways should lead directly outdoors and be so arranged that a line drawn down the center of the last flight of steps can be projected directly through the center of the doorway; that is, as children come down the final flight of stairs they should not have to turn before reaching the door.

In Brookline the width of stairs ranges from four feet two inches to six feet, while the average is close to four and a half feet. Risers are eight inches high and treads 13 inches deep. The stairs of the Driscoll, Devotion Primary, Devotion Intermediate and Pierce Grammar Schools are all somewhat too wide.

Handrails.

While in most of the Brookline buildings handrails are supplied on both sides of the stairways, in the Runkle primary, Lincoln primary and Parsons Schools, however, there are stairways where the handrail is on one side only. These three schools are intended for small children who particularly need handrail support. A second rail should be installed at once.

In 13 Brookline buildings, for which notes were taken, four provide railings around landings, while nine omit them entirely. Ordinarily, when school children are passing up and down stairs, they should not be encouraged to make use of the handrail. The rail is installed so that in case of a panic if children at the rear of the line have a tendency to push forward, those in front may be kept from falling by catching hold of the rail at the side. During panic, landings become particularly dangerous because they are usually wider than the main stairway, so that if children are frightened they find opportunity on the landing to break through the line in an endeavor to get ahead of the children who have preceded them. Handrail supports on all stair landings are a necessary precaution against panic. Rails should be installed on

the landings of the Driscoll, Devotion, Pierce, Longwood, Sewall and Lawrence Schools.

Landings.

Since the first landing of the main stairway is usually visible from the entrance, principals and teachers are apt to use this space for pieces of statuary, banks of ferns and the like. The artistic effect secured is undeniably good, but the practice is, nevertheless, dangerous. For example, on the first landing of one of the stairways at the Lawrence School there is a large statue placed in one corner. The fire escape is so dangerous that the principal will not let the younger children touch foot upon it. The cellar stairs lead directly to the main stairs without satisfactory cut-offs. In view of all these facts, it is distinctly unwise further to limit the capacity and safety of the Lawrence stairs by placing obstructions upon the landings.

There are two ways of placing statuary in halls and upon landings so that it may add to the artistic appearance of the building and yet not hamper rapid exit. The first is to place all decorations upon the walls at the height of at least five feet from the floor so that children may pass beneath them. The other method is to build a small alcove in which the statue may be placed so that it will be flush with the wall surface. Where landings are very wide, one corner may be utilized for the placing of a statue, if precautions are taken to place one or more heavy horizontal rails about two and one-half feet high across that corner. Such horizontal bars are known as cut-offs and should be used on all landings with square corners, into which there is danger that small children may be pushed in time of panic. In all buildings where it is impossible to remodel landings by giving them rounded corners a single stout bar placed horizontally at a distance of two and a half feet from the floor across each corner will form a satisfactory substitute. The statues at the Devotion intermediate and Lawrence Schools should either be entirely removed from the landing or else cut off by such horizontal bars. Small cut-offs are also needed on the stair landings of the Driscoll, Devotion primary, Pierce grammar, Lincoln primary and Sewall Schools.

Summary and Recommendations.

1. There is no completely fireproof, panic-proof stairway in any Brookline school building. Most of the stairs are of wood; they are not separated from the rest of the building; they do not lead directly to the main exit, and their landings need cut-offs and handrails.

2. The worst stair conditions occur in the Lincoln, Sewall, Parsons, and Lawrence buildings, which, if the recommendations of this report are followed, will be vacated as soon as a new building can be erected.

3. In buildings which are to be continued in use, steps should be taken immediately to replace all wooden stairways with others of fireproof material. Where the construction of the building will allow it these stairways should be enclosed in fireproof partitions, and made to lead directly to the open air. Money spent for safe stairways is a form of life insurance which Brookline parents should be glad to give their children.

EXITS.

Hardly less important than the stairway itself is the exit to which it leads. Most of the loss of life at the Collinwood fire occurred between the inner and outer doors of one of the vestibules. Inexpensive changes which could have been made by an ordinary carpenter in the course of a day's work would have saved literally scores of lives. One of the most important features of a good exit has already been mentioned in the paragraph dealing with stairways; that is, that a line drawn down the center of the stairway when projected should pass straight through the center of the exit. Descending files of children should not be deflected either to right or left.

If there is a vestibule it should either have a perfectly flat floor or a flight of four or more steps. Where one or two steps are in the center of the vestibule, children are apt to forget them and stumble. Where steps occur within the vestibule or outside the main doorway they should be preceded by a platform which is at least as wide as the arc of the swinging door. Serious ac-

cidents may result from steps which, because they are placed too near a doorway, are not seen by persons hurrying through. It is strongly desirable that all outside doors be fitted with panels of wire glass, so that when small children are standing on the threshold their shadows may be visible through the glass. This simple precaution will save many children from being pushed down by the hurried opening of doors.

Single doors are better than double doors. Where the entrance is wide and many children must use it the most desirable plan is a series of single doors, each set in its own frame. Doors of this type have been widely adopted by public railroad stations because it has been found that they are the most efficient for handling large numbers of rapidly moving people. If double doors are used they should be made so that both sides swing open when the door is unfastened from the inside. If only one side swings free when the handle is turned or lock pushed the available exit space is cut in half. Worse than that, a dangerous corner is created where in case of panic small children would be crushed and caught. At the time of the Collinwood fire that is exactly what happened.

As is true in most of the Brookline schools, the exit doors at Collinwood did not extend for the complete width of the vestibule. At each side of the doorway there was a vacant space forming a sort of alcove. When the alarm of fire was first given children in the first grades escaped but dashed back into the building in a search for their coats and hats. As they were coming in children from the upper grades came rushing down the stairways and the two lines met. Some one fell. The fallen child formed an obstacle over which others stumbled, and in a few seconds the alcoves at each side of the vestibules were filled with struggling children. There they piled, one on top of the other, packed so tightly that it was impossible for the parents and relatives outside to open the doors. It is said that after the fire was over children's bodies were found actually touching the ceiling of the vestibule. Even when one side of the doorway was opened, they were packed so closely that it was impossible to pull them out to safety.

After studying the plans of the Collinwood School and speaking with those who were present at the time of the fire, the matter of correct stairs and vestibules assumes tremendous importance. Doors should extend for the full width of the vestibule opening, so that no dangerous corners are left at either side. They should be arranged so that no child can possibly be locked in. Locks should work from the outside only. Each door should be equipped with a panic bar so arranged that when the weight of the child is thrown against the bar both sides of the doorways will swing open.

Brookline Exits.

Very few of the exits in Brookline are directly opposite the center of the stairway. Little can be done in remedying this matter in old buildings; but any plans for new buildings should be carefully inspected upon this point. In several cases there are steps in the vestibule, and it is usually true that these steps are either too few in number to be safe or are placed too near the inside doors.

Very rarely does the doorway include the entire width of the vestibule. Dangerous alcoves similar to those which caused the loss of life at the Collinwood School exist at the Runkle primary, Runkle grammar, Pierce primary, Pierce grammar, Longwood, and Cabot Schools. In most cases these vestibules can be made safe by placing planks horizontally at a distance of two and a half feet from the floor across each alcove as was suggested in the paragraph dealing with dangerous corners on stair landings.

In the basement of the Pierce Grammar School there is at one end a flight of nine steps about 14 feet wide leading to an outside doorway. The inner doorway of the vestibule occupies about one-third of the stair width. The outer doorway is moved to the left, so that lines must pass through the vestibule at an angle. Deep alcoves are formed within the vestibule and dangerous corners at the head of the ascending stairs by the vestibule partition and the two doorways. Practically two-thirds of the width of the stairway is of no value, since children ascending

at either side must go toward the middle before they can get out. By a few simple changes this entrance could be greatly improved. The two vestibule doors should be made opposite each other. Dangerous corners which remain should be barred off, and hand-rails set five feet apart down the stairway directly opposite the doors. The rest of the stairway, to the right and left of the center, should be shut off, so that children could not be caught there in case of panic.

Bolts and Bars.

All of the doors in Brookline swing out, except the inner vestibule doors of the Driscoll School. These doors swing in and should, therefore, be kept open and fastened back against the wall during school hours. Almost all of the doors are double. They are commonly fastened with a latch, or by a knob on one side and a handle on the other which is connected with bolts at the top and bottom. By turning the handle these bolts are drawn. It is a common practice to open only one side of these doorways, since in order to have both sides swing out special manipulations are necessary. The side to the right will usually open easily, although at the Lincoln and Parsons Schools the Surveyor had difficulty in opening even that side. For a small and frightened child it might have been impossible in those schools to get out. In several cases it took a considerable amount of effort to open both wings of the doorway.

On certain doors at the Driscoll and Devotion Schools panic bolts have been installed. These are bars placed across the inner surface of the door and so arranged that weight resting on any part serves to draw the bolt and leave the door free. The value of these panic bars when properly placed is immense, but in neither the Driscoll nor Devotion Schools is it a real improvement on the other type of fastening because the bar is placed only on one side of the doorway, and the other wing of the door blocks action so that the panic bolt cannot work properly. At the Driscoll and Devotion Schools the Survey visitor had serious difficulty in getting out of the doorways closed by these panic bolts. In fact, at the Devotion School, at two different visits

she found it impossible to get out of the main entrance and was obliged to use an exit at the back. Every school ought to be equipped with panic bolts on its outside doors, but these bolts should be so arranged that they will work.

Summary and Recommendations.

The exits in the Brookline schools show the same defects which led to most of the loss of life at the Collinwood fire. At Collinwood the stairs were slightly to one side of the entrance; so are most of those in Brookline. In the Collinwood School alcoves were left unbarred at each side of the vestibule; similar alcoves are found in most of the Brookline schools. At Collinwood doors were double and swung outward, one side was bolted. In most of the Brookline schools doors are double and swing outward, and one side is bolted.

If the danger of accident is to be avoided dangerous corners must be cut off, glass panels inserted in outer doors, and panic bolts supplied and adjusted on each wing of the door in such a way that pressure on any part of the bar will make the door swing open. These changes should be made at once.

FIRE ESCAPES.

Three fire escapes are found on Brookline elementary schools. At the Longwood School a wooden stairway enclosed in wooden walls leads from one of the rooms on the second floor directly outdoors. In case of fire children might succeed in escaping by this stairway providing it did not itself catch fire first.

At the Lincoln annex in the back there is a metal fire escape which connects with two rooms on the third floor which are not now used and two classrooms on the second floor. It has no connection with those on the first floor. Access from the second and third floors is gained by crawling through the window. There is no full length opening. Treads and framework are of metal lattice, without risers. The stairway is within two feet of the main wall and passes directly in front of window openings. If there were a fire children would probably be afraid to descend this fire escape because it gives an impression of instability.

Moreover, as it ends five feet from the ground there would be an immediate blockade on the stairway unless adults were at the foot to lift the children off. If the annex were on fire, in all probability the escape would be wrapped in flames breaking through the windows before the children could reach the ground. Moreover, it is readily accessible to only two of the 22 classrooms in the Lincoln building. The janitor reports that he has never seen the fire escape used and that he would not care to try to go down it. The principal says that he himself has tried the fire escape, but he does not want the children to use it since he considers it almost as dangerous as a fire. He is probably right.

At the back of the Lawrence School there is a fire escape leading from the assembly room. Because of the fact that the basement is well above the ground level at the back of the Lawrence School the landing on the fire escape is really three stories high, but there is no connection with the fire escape for rooms on the second story. The fire escape opens from the assembly room by a full length door which is hinged in the middle. The Surveyor opened one side of this door with difficulty, but had to struggle in order to pull the bolt at the middle which holds the other half of the door. The door had caught at the bottom and was exceedingly difficult to open. The escape itself is of iron with treads made of slats and without closed risers. It is so close to the building that it would easily be wrapped in flames if fire broke out. Steps reach to the ground. The principal says that children in the ninth grade have tried the fire escape, but that he considers it too dangerous for the use of smaller children in his school.

Most of the buildings in Brookline are not fireproof and, while some of them are of the so-called slow burning construction, several buildings are veritable fire traps and in most of them the possibility of fire, smoke, and resulting panic is seriously large. Safety is not secured by putting up fire escapes such as those placed on the Lincoln and Lawrence Schools. Such escapes are almost worse than none, since they may possibly lull some of the teachers into a feeling of false security.

If metal fire escapes are used certain rules should be followed. In the first place, the fire escape should lead to the roof and to the ground. It should lead to the roof so that firemen can readily gain access there. It should lead to the ground so that children can readily escape. On each side of the fire escape there should be a high protecting wall of wire or metal slats so that children will feel safe in going up and down. It is a simple matter to place a door at the bottom fastened with a regular latch, and to cut the knob off on the outside. This makes it possible to open the door from the inside by turning the handle, but prevents sneak thieves from gaining access to the building by opening the door from the outside and climbing the fire escape.

Entrance from classrooms should be by means of full-length doors with glass panels so that they may serve also as windows. The doors should open directly to the floor level and children should be able to walk quietly out of the classroom on to the fire escape as naturally as they walk into the main corridor. Every classroom in a non-fireproof building should have access either directly to a fire escape or to a fire escape by going through not more than one other adjoining room.

Metal fire escapes should be set well out from the building for a distance of at least 15 feet, so that in case flames break out the windows, as is likely to occur, they will not immediately wrap around the fire escape. For a similar reason whenever possible placing the fire escape across other windows of the building should be avoided. Wedge-shaped steps such as are used in the fire escape of the Manual Training building should not be tolerated. Treads and risers should be of metal slats placed close together so that children will not become dizzy as they walk down. Handrails should be placed at each side and should continue from the top to the ground. There should be no holes in the platforms where children climb through; rather, the landing of a fire escape should be constructed on the same plan as that of a regular school stairway.

Fire escapes constructed in this way are safe but unsightly. If the stairs within the building were really of the best modern type outside escapes would not be necessary. If the inside stair-

ways cannot be properly remade one of the best means of securing safe exit is by building fireproof towers at each end of the building, and placing in each a fireproof stairway of the standard school type. Properly built stairs make the best fire escapes.

Summary and Recommendation.

In spite of the fact that most of the buildings present dangerous possibilities in case of fire there is not one good fire escape in the Brookline system. In only three elementary schools is there even an attempt to provide an outside fire escape, and each of these is improperly constructed. It is strongly recommended that adequate fire escapes of the most approved modern type, easily accessible from every classroom above the first floor, be installed on every Brookline building which is not of complete fireproof construction.

FIRE EXTINGUISHERS AND ALARMS.

Every elementary school in Brookline is well equipped with chemical extinguishers. These are usually placed, one or more in the basement near the heating apparatus and one or more on each floor. The chemical extinguisher is an excellent means of controlling flames, and Brookline is wise in supplying them so freely. Hose is found in one or two cases. There are no fire pails, and no automatic sprinklers in the basements.

At every visit the Survey visitor asked the janitor (and where possible also asked the principal) where the fire alarm was situated and what action would be taken in case fire were discovered. Almost uniformly surprise was shown at this question. In most of the schools the suggestion that an alarm box should be established in every building which would give notice directly to fire headquarters was received with an air of somewhat tolerant amusement. In more than one case there seemed to be an impression that fires in school buildings were very rare and need not be worried about.

In most of the grammar schools there is private telephone connection with the general school offices. At the Driscoll grammar the telephone is on the public line; it would be possible,

therefore, for Driscoll to telephone direct to headquarters. The other grammar schools would be obliged to send word to the main office and trust that some one there would then send word to the fire engine house. In none of the primary schools, except the Pierce primary, where there is a telephone, is there any means of giving an alarm.

There is a serious lack of comprehension in Brookline of the value of time in case of an emergency. It is literally true that five minutes lost may mean that flames will gain such headway that they cannot be controlled. Fire frequently spreads with perfectly amazing rapidity. In such large buildings as the Runkle, Devotion, and Lincoln Schools, if fire were discovered at one end, the time taken to run through the various sections until the telephone could be reached might well result in a total loss of the building. Moreover, where word must be sent by a private telephone delays are almost inevitable. Officials in the central office do not always hurry to answer the telephone, and they cannot know the importance of the call. If fire should occur outside of office hours it might be impossible to get any answer at all.

At the Lawrence School the Surveyor was told that there was no need of a special alarm, since the fire box was directly in front of the building. At the Longwood there was in evidence a feeling of security because the fire engine house was just around the corner. But if children are in a building and a fire is discovered, there is no time to run outdoors and tell some one else about it. It should be possible to ring in an alarm from every floor in every school building. There should be an alarm box in the basement, one on the first floor, one on the second, one in the principal's office. These alarms should be so arranged that by simply breaking the glass or pressing a button an alarm would go directly to the nearest fire engine house. Quick notification of the fire department is one of the most important elements in safeguarding the lives of school children.

Summary and Recommendations.

1. Brookline depends upon a plentiful supply of chemical extinguishers in order to protect its school children. This measure is wise, but does not go far enough.

2. A special fire alarm box should be installed in every public school. No provision has been made to insure that, in case of fire, warning will be sent without more than a minute's delay direct to fire headquarters. Reliance is placed for the most part on private telephone connections with the School Committee's office, or on sending a messenger to the nearest public fire alarm box.

Building Regulations.

Several times when the Surveyor had occasion to point out defects in existing buildings she was told, "If this thing were really bad the building inspector would have ordered us to change it."

There are two answers which might be made to such an argument: The first is that legal building requirements always represent minimum standards. They state how bad a school may be and yet be permitted to stand. The community which regards the O. K. of the building inspector as a certificate of merit is only slightly higher than that which must be kept decent by force. It can hardly lay claim to educational respectability.

In the second place, there are certain standards which have recently been recognized as so important that they have been crystallized into law. Many such laws, however, are not retroactive. They do not apply to buildings already erected. Several of the Brookline buildings could not receive even the minimum police sanction were they being built today, but they are allowed to stand because there is no way of getting rid of them.

The regulations of the Massachusetts District Police relating to the erection, alteration, and inspection of schoolhouses are of two types. Certain features are definitely required. Others are made mandatory at the discretion of the local building in-

spector. Under the latter case conditions which are not tolerated in one community may be disregarded in another, depending upon who makes the inspection. The following are some of the features required by the Massachusetts law which should be of particular interest to readers of this report. (A star indicates that the requirement holds for buildings erected after November 1, 1913. Two stars indicate that the requirement may be extended to existing buildings at the discretion of the building inspector.)

(a) Unless the first floor of the school building is of fireproof or mill construction basement ceilings shall be of metal lath and hard plaster.

(b) Corridors shall not be less than 10 feet in width in the clear for buildings of eight classrooms. They may decrease one foot in width for every two classrooms less than eight, and must increase one foot in width for every two classrooms more than eight.*

(c) Classroom windows shall not have less than one square foot of glass to each five square feet of floor area.**

(d) Stairways shall have handrails on both sides.

(e) Stairways from the basement to the first story, and elsewhere if so directed, shall be enclosed with fireproof walls, with fireproofed self-closing doors.*

(f) There shall be not less than three risers between landings.

(g) No winding steps shall be used.

(h) No closets shall be placed under any stairs.

(i) Where the assembly hall is above the second story there shall be one or more stairways from the assembly hall. These stairways shall be enclosed in fireproof or fire-resisting walls, and shall run directly to and connect with the ground, and shall have no connection with any other part of the building.**

(j) Exterior vestibule and corridor doors, if so directed, shall have plate glass upper panels.

(k) No boiler, fuel, storage or workrooms shall be placed under a corridor, stairway, or egress.**

(l) Where so directed boiler, fuel, storage, or workrooms shall be enclosed in masonry or fireproof walls, with fireproof ceilings,

and all openings in the walls to the basement shall be provided with self-closing fireproof or automatic fire doors.

(*m*) Steam, hot water, electricity, furnaces, or jacketed stoves may be used for heating. (The unjacketed stove is not included.)

(*n*) Each sanitary or recreation room and each corridor shall have sinks of an approved size or an approved number of lavatories.

(*o*) Where suitable water supply and sewerage are not available approved earth closets or privies and urinal trough shall be placed upon the school grounds not less than 30 feet from the building.

(*p*) Fire stops shall be provided, as directed, in floors, walls and stairways, and if partitions around stairs are not of brick, or its equivalent, they shall be filled in solid between the studs and plastered with cement plaster upon metal lath; and such further means throughout the building as may be necessary to prevent the spread of fire or its communication from any steam boiler or heating apparatus therein shall be provided.*

These are the minimum regulations of Massachusetts, laid down by the District Police and enforced by building inspectors, so that, no matter how poor or how negligent a town may be, a certain amount of protection will be insured to its children. Even when measured by these standards, Brookline does not make a worthy showing.

HIGH SCHOOL.

LOCATION.

The high school is located on one side of a square, the center of which is occupied by a large public playground. Near by are the Practical Arts High School, the Bath building and the Public Gymnasium. Heating and lighting for all four buildings are furnished by a plant in the basement of the Practical Arts High School. While not exactly at the center of population, the location of these buildings is fairly central and the point is easily accessible from other parts of town. A steam railroad runs directly parallel with one side of the square.

The high school building is so situated that most of the classrooms on one side receive sun from the east and south during a greater part of the morning session. Back of the building is rising ground with a few trees so situated that they cut off light from several of the classrooms. The orientation of the building is such that many of the classrooms receive too much sunlight, while several others receive too little.

REMODELLING THE OLD HIGH SCHOOL BUILDING.

The old high school building was erected a little over 20 years ago. In the fall of 1914 the number of students had increased so rapidly that they could not be properly accommodated in the building as it then stood. Accordingly, the School Board drew up a plan involving the erection of a new assembly hall and an addition at the rear of the present building. This plan was submitted to the town meeting, but was not adopted. Instead, a special committee of seven citizens was appointed by the moderator for a further study of the question. After a great deal of careful work this committee reported a plan whereby through the extension of the assembly hall and the placing of partitions across the ends of corridors and down the center of classrooms, additional class space might be secured with comparatively little expense. The plan of this lay committee was adopted and many of the proposed changes were made. Then, as citizens realized what the new plan involved, considerable opposition to it developed, and finally work on the alterations was stopped and the whole matter referred back to the School Committee. When it was decided to have a School Survey, members of the Survey Staff were asked to give particular attention to the whole high school building problem.

SIZE OF ROOMS.

The original plan of the old building provided classrooms at four corners and along the front of the building, each designed to hold 50 students. Most high school classes, however, are not larger than 35, and many cases are found of 20, 15 or 10. Architects are now designing new high school buildings with rooms of all sizes to fit these varying needs; but to remodel an old building

with huge classrooms is an exceedingly difficult matter. It is, of course, possible almost to double the capacity of such a building simply by running partitions down the center of classrooms. In the present building at Brookline, for example, some rooms designed for 50 students have been divided to make two almost square rooms for 35 pupils each, but the results have not been altogether fortunate. In one room when the door swings half open it blocks one of the aisles so that children could not escape by that means. Windows cannot be opened from the bottom during cold weather because desks are placed touching the wall, and drafts would blow against the necks of the pupils.

In other cases the changing of partitions has resulted in rooms which are very long and narrow, so that in one room, at least, students seated in the row farthest from the window are 32 feet from the source of light. There is now in the high school one room which is 11 feet by 24 feet; another, 43 feet by 18 feet; another, 15 feet by 39 feet; windows in each instance being on the narrow side.

In the Brookline primary schools floor area is usually about 20 square feet per child, but some of the rooms in the high school allow only 12 square feet of floor area for each pupil. When it is remembered that not only are pupils in the high school larger than primary school children, but that their seats and desks take up considerably more space, some idea of the crowded conditions in these rooms may be gained. For elementary schools it is an accepted standard that there should be at least 250 cubic feet of air space for every child in the room. In certain rooms in the Brookline High School the cubic air content per pupil amounts to only 168 cubic feet.

Conditions in the larger rooms are not much more satisfactory. These large rooms are used as "home rooms" to which pupils come for study or to put away their books. Each desk is divided by a partition down the center so that it will accommodate two pupils. At the back or along the side of the room there are also lockers for additional students. Thus, in Room 7 there are 50 desks, each accommodating two children, and 50 lockers at the back. That is, 150 children regard Room 7 as their home room.

When classes change, pupils throng in and out of this room in order to secure their belongings. It is so crowded that when locker doors are open it is almost impossible to pass between them and the desks. One finds it unpleasant to contemplate what might happen in such a room in case of an alarm of fire.

LIGHT.

Lighting conditions in the high school are decidedly unsatisfactory. The building is so placed that its corners point towards the north, south, east and west. All the rooms along the front of the building receive light from the east or south; that is, are subjected to the direct rays of the sun during the entire morning. The opposite side, however, receives light only from the north or west and many of the rooms are badly shadowed by hill and trees at the back, or by wings of the building.

In six rooms, five of which are large and designed to accommodate 50 pupils each, light is admitted from the front and left. These rooms are usually used for study purposes. Here, as children sit at their desks trying to read, they are subjected to the constant strain of front light pouring into their eyes. In rooms receiving direct sunlight, as soon as the sunbeams begin to pour in through the windows the shades are quickly drawn and, as a result, the desks farthest from the window are plunged into shadow.

Certain rooms are now so dark that they should not be used for any work where eye strain is involved. For example, the classroom which has been made by running a partition through the art gallery is 22 feet by 39 feet, and is lighted at the left by three windows, each with a rounded top. The total glass area of these windows is equal to seven per cent of the floor area. It should be equal to not less than 20 per cent. In addition, heavy brick piers and festoons of ivy shade the windows from the outside and, because the room is so much longer than it is wide, pupils seated at the further side receive only a very small portion of the sunlight which is allowed to enter.

The room beside it, designed for 18 pupils, is 24 feet by 11 feet. It is lighted by one window. Vines darken the window. The total glass area is 10 per cent of the floor area. In Room 38,

which was formerly part of a lecture room, the floor is 39 feet by 15 feet, except for a portion near the window where it is four feet deeper. It is lighted by three windows, rounded at the top, at the left side of the room. According to the most generous estimate, the glass area is only 11 per cent of the floor space, and here again the room is so much wider than it is deep that the light does not reach satisfactorily students seated near the door.

Under the assembly hall there is a room which is shaded by the opposite wing of the building in such a way that artificial light must be kept going during the entire school period, even on bright days. This room should be completely abandoned for regular classroom exercises.

Lighting Summary.

Lighting conditions in the Brookline High School are very bad. Glare from direct sunlight, front lighting, insufficient glass area and outside obstructions are to be found singly or in combination in almost every classroom. This report urgently suggests:

1. That in every room now receiving front lighting chairs and desks be turned to face in the opposite direction. Front lighting has been disapproved of since the days when Horace Mann wrote his criticisms of the Boston primary school. It has no place in the modern system.

2. All green shades should be removed from the building. Light-colored, adjustable shades should be provided, so that in order to shut out the glare of direct sunlight it will not also be necessary to plunge classes in gloom.

3. It should be possible to see the sky from every seat in the building. Every room where this rule is not complied with should be under suspicion. As soon as space permits, the darkest rooms should be closed to regular classes.

Toilets.

Toilets are located in separate towers near the stairway. While the equipment is of rather old type, it is well taken care of, and the rooms are fairly well heated and ventilated. Hot and cold water are supplied in every toilet room. The fixtures are adequate in number.

SPECIAL ROOMS.

It is a very serious fact that there is no room in the high school where girls may lie down and rest in cases of illness. At present when a girl is sick she can secure no privacy except in the toilet room, and even there, accommodations for her are inadequate. As has been suggested in an earlier paragraph, there are several rooms which are so dark that they cannot properly be used for classroom exercises. One of these might temporarily be used as a rest room for girl students. It would not make a good rest room because it would not have sufficient air and sunshine, but it would at least be better than the present arrangement.

The women teachers are not properly cared for. At the time of the Survey, the teachers' room was being used for medical inspection of boys, and at other times used as a reception room. Teachers should be given an attractive room, large and airy, and at least as well equipped as the rooms for teachers in the elementary schools.

Accommodations for hanging up pupils' wraps are seriously insufficient. The cases of pediculosis found among students at the high school are easily accounted for when one looks at the way in which hats and wraps are placed. Hooks are placed on the walls of the alcoves between classrooms. Usually down the center of each alcove runs a partition made of wood and wire screening. These partitions reach only about five or six feet from the floor, and students are accustomed to lay their hats one upon the other on top of the partition wall. It is practically impossible under the present scheme to separate one's personal clothing from that of other students. There are no adequate provisions for the care of rubbers or umbrellas. Better wardrobe accommodations should be supplied at once.

VENTILATION.

In the basement of the high school building there is a battery of steam coils. Air is admitted through large openings into the coil room. After it is heated it is drawn out by an electric fan, moisture is added and the air is then forced up into the classrooms. Tests made on two consecutive days in December in order to

find out the amount of moisture in the air showed that the high school rooms have as a rule a higher relative humidity than do rooms in the elementary schools. Of the eight classrooms studied the worst showing was in the typewriter room south of the main entrance, where the relative humidity was 28; and the best showing was made in Room 33, where the relative humidity was 38. Findings for the various rooms are shown in the following table:

PSYCHROMETER READINGS IN THE BROOKLINE HIGH SCHOOL.

Case	1916 December	Barom- eter	Dry Bulb	Wet Bulb	Differ- ence	Mean	
						Outdoor Relative Humidity	Indoor Relative Humidity
a	6	29.6	72	54	18	69	28
b	5	29.7	72	55	17	87	31
c	6	29.6	70	54	16	69	33
d	5	29.7	70	54	16	87	33
e	5	29.7	74	57	17	87	33
f	5	29.7	67	52	15	87	33
g	6	29.6	69	54	15	69	35
h	6	29.6	67	53	14	69	37
i	6	29.6	68	54	14	69	38

The temperature of rooms receiving sunshine all morning frequently runs far too high. Not all the rooms are equipped with thermometers, but where they are so furnished teachers report very high temperatures. Temperatures as high as 73 and 74° F. were observed at the times tests were taken; and teachers report that in some rooms the thermometer has actually registered as high as 79 degrees. While teachers in rooms on the southeast side are complaining because of excessive heat, teachers on the opposite side of the building are frequently chilly. It was interesting to note in talking with the various teachers that those who habitually held classes on the south side kept their windows open and said there was no rule to the contrary, while teachers who spent most of their time in classrooms facing on the northeast kept their windows closed and said that they were not allowed to open them.

Many windows in the high school at the time of the first Survey visits could not be opened at the top because the window

shades were fastened on them in such a way that window sticks could not be inserted in the sash. They had apparently been closed in this way for years. At the time of the December visit changes had been made so that certain windows could be opened from the top, but in other rooms the older conditions still prevailed.

As was stated in the section dealing with elementary schools, it is considered a standard for elementary buildings that there should be admitted to the classroom at least 2000 cubic feet of fresh air per child per hour. Anemometer tests were made in certain high school rooms to determine how much air was being admitted through the fresh air stacks into the rooms. Findings range from 1020 cubic feet per pupil per hour to 2580 cubic feet per pupil per hour. As was the case in the elementary schools, much of the air actually received in the classroom was admitted through open windows instead of through the fresh air flue. The outlets show a variation of from 360 cubic feet of air per pupil per hour in Room 29 to 3300 cubic feet in Room 38.

In Room 33 the one window was closed at the time the tests were taken, no fresh air was entering in the fresh air inlet and no foul air was escaping through the foul air outlet or transom. The window was fastened, closed at the top. No thermometer was in the room. In Room 7 at 1.30 P.M., December 5, with three windows at one side opened for a foot each at the bottom and three doors wide open into the hallway, the thermometer registered 78° F. Room 1, situated directly below it, also frequently shows very high temperatures. High pressure steam pipes connecting the high school with the Manual Training School run directly under one corner of this room, and render it hot and stuffy. It is really a basement room, and ground damp works in through the foundation walls. The window casing at one end is rotten. Cockroaches are very plentiful in this room, and occasionally climb into the room above.

Summary.

Ventilation conditions in the Brookline High School are characterized by moderate humidity, excessively high temperatures

in certain rooms and low in others, and great variability in the amounts of air admitted and expelled in different rooms. Little can be done to remedy the bad elements of this situation because the ventilating system is of an old type. Use of the worst rooms may be discontinued, and windows may be opened at the top. Expensive alterations cannot be recommended.

FIRE RISK.

Were it not for the fact that the heating plant for the high school is situated in the Manual Training building, the fire risks of the present high school building would be so serious as to demand immediate and important structural changes. The building now presents most of the features which lead to loss of life in case of an alarm of fire. It is true that it is of slow-burning construction, so called, and that the danger that fire will spread in the space between plaster and outside walls has been greatly lessened by fire stopping. Nevertheless, even without actual fire, if the building were full of pupils and an alarm were given, serious accidents might easily result through panic.

The stairs are along one wall in the central part of the building, and are not inclosed. They are seven feet four inches wide between banisters. They have handrail supports on each side, but not down the center. If stairs are to be wide, they should always have a central handrail so that pupils coming down in a hurry and crowded away from the side may grasp the central rail to keep themselves from falling. There are no rails on the landing. Steps are of wood supported by metal risers. If fire started in the basement it would almost undoubtedly use the stairway as a flue, for the stairs are not inclosed from the rest of the building, and are, therefore, not protected from drafts.

Storage cupboards are situated under the stairways on the ground floor. In one cupboard furniture is stored; in the other there is a box of sawdust. The stairways empty into the main hall opposite the teachers' entrance. Since pupils are not accustomed to using this entrance, in case of an alarm, many of them would run to the basement floor in order to escape by the doors

they commonly use. These doors are at the ends of the building, a long way from the foot of the stairways.

Pupils' exits are supplied with vestibules, the inner doors of which swing back and forth, while the outer doors are double and bolted. They should be provided with panic bolts. The main entrance is of a good type. Doors are hung in separate frames, each swings outward and is equipped with a panic bolt so adjusted that it actually works. In the vestibule of the main entrance there is an alcove each side of the doorway which is five feet deep.

A horizontal bar should be placed about two and a half feet from the floor across each of these alcove spaces so as to act as a cut-off. Pupils' exits should certainly be made as safe as those provided for the teachers.

The attic is large and drafty. Very little furniture is stored there, and none should be added. The roof is supported by large wooden beams. There are no horizontal cut-offs to stop drafts. A large clock tower rises from the center, which would be a sure means of establishing a draft through the building. A winding iron stair leads from the top floor to the attic. The door to this stairway should be kept locked.

While it is true that the chief source of danger has been removed by furnishing heat from an adjoining building, nevertheless, there are several places where fire might start and where special precautions have not been sufficiently taken. The chemical and cooking laboratories, the kitchen where lunches are prepared, and the special heater in the basement used to supplement the regular apparatus are all possible sources of danger.

The auditorium occupies the central wing of the third and fourth floors. It has no direct exit to the outside. A winding metal stairway leads from the dressing room to the floor below, but would be of practically no use in time of panic. Audiences are obliged to leave by means of the main corridors and stairways. No fire escape is attached to the auditorium. In fact, there is no fire escape anywhere. Chemical extinguishers and hose are supplied in the various hallways, but there is no direct alarm to fire headquarters.

Fire Risk Summary.

To render the high school really safe would involve extensive alterations. As soon as possible a new building should be secured, but in the meantime teachers and students should be made fully aware of the danger and taught what to do in case of fire.

A fire alarm box should be placed on each floor, with direct connections to the fire engine house.

Outside metal fire escapes should be placed at each end of the building.

Cupboards under the stairs should be emptied and locked.

Panic bolts should be placed on the basement doors.

Alcoves in the vestibule of the main entrance should be closed by horizontal bars.

The clock tower should be partitioned off from the main attic in order to avoid drafts.

Fire extinguishers should be placed in chemical and cooking laboratories, the lunch kitchen, and the boiler room.

Pupils and teachers should be given lessons how to handle an extinguisher, how to turn in an alarm, and how to send word through the building in case of fire.

Fire drills should be held twice a month. They should come at different hours, and should call for the use of different exits. Frequent practice should be given all pupils and teachers in descending fire escapes if these are provided.

THE PRACTICAL ARTS AND MANUAL TRAINING BUILDING.

The Manual Training building was erected in 1902 in order to furnish shop facilities for regular high school students. In 1913 the School of Practical Arts was established and given space in the same building. As at present organized, therefore, the two schools are under one roof, with two principals, each in charge of part of the work. The janitor receives directions from both heads.

The school is located on Tappan Street, facing the playground and directly in front of the steam railroad. The railroad runs so

close that windows upon that side have to be kept shut in order to exclude cinders and noise.

In the basement of the Manual Training building there is situated the central heating plant which serves not only that building, but also the public bathhouse, public gymnasium and high school. It is a large, high-pressure steam plant, together with dynamos for generating electricity. Part of the plant is in a one-story wing, but the rest of it extends under the main building. Large spaces around the boilers and careful housekeeping give an impression of safety and precautions against accident which is not warranted by the facts.

In the first place, the danger of fire or explosion from a large and complicated steam plant, particularly of the high-pressure type, is such that it should be in a separate, fireproof building. Such a plant should never be installed in the basement of a public school building. In the second place, the danger is aggravated by the fact that while the Manual Training building is fire-retarding it is not completely fireproof. Floors are of wood and the ceiling of the boiler room is of wooden construction. A wise precaution has been taken in keeping a watchman in attendance at the heating plant day and night, but this does not eliminate the very real danger from explosion.

Since the heating plant cannot be removed, steps should be taken to replace the wooden ceiling of the basement with concrete or other fireproof material. In future building operations the people of Brookline should insist that such high-pressure plants be placed in completely separate buildings.

The main fuel supply for the heating plant is confined in a fireproof fuel pocket extended underground beyond the building, but a smaller supply is stored near the foundry room, close to the main stairway. It is piled upon the floor and held in place by wooden boarding. Boxes of wood shavings and kindling are close by. A lighted match carelessly flung might easily give rise to a sudden fire which could cause serious trouble. If fuel is to continue to be stored in the room bins should be built, lined throughout with fireproof material, and completely closed off from the rest of the room. The expense of building such a fuel

bin need not be excessive, and the elimination of fire risks would be considerable.

STAIRS.

There is only one stair well in the Manual Training School. The stairs lead from the entrance to the second floor, and are of the inverted Y type — that is, two stairs lead from the first floor to a mezzanine landing, and one wider flight leads from this landing to the floor above. The stairway is of fireproof material, with non-burnable treads, risers, and supports. It is not inclosed. The two flights leading from the first floor to the landing are seven feet wide, while the upper stair is practically 12 feet wide. Handrails are supplied on each side of the stairway, but not on the landing or down the center. Seven feet is too wide for a high school stairway, but too narrow to allow a center rail. The 12-foot section, however, should be supplied with a center rail without delay.

EXITS.

The main entrance is directly at the foot of the stairway. Three doors, hung separately, lead from the vestibule to the stairway, and two doors lead to the basement. In this way the main stairway is effectively cut off from the basement stair well, and the danger that fire will spread by stair drafts is largely eliminated. There are three outer doors, each double, and each closed by the ordinary type of knob and latch. When these doors are locked it is impossible to get in or out. As was stated in an earlier section, it is a cardinal rule in schoolhouse construction that bolts should bar entrance, not exit. It should be impossible for any pupil to find himself locked in. This report recommends, therefore, that the locks on the doors of the Manual Training building be removed without delay and panic bolts installed, as has already been done on the main doors of the high school building. Similar locks should be placed on the basement exits.

CORRIDORS.

Corridors are 14 feet wide and well lighted. Along one side, opposite the stairs, is a row of showcases, where samples

of students' work are displayed. These exhibits are interesting to the visitor, but the hallway is not the place for them. As at present arranged they cut the available corridor space practically in half, directly opposite the stairway where it is most needed. If the cases must be stored in the corridor they should at least be moved close against the wall, so that no space is lost behind them. A far better plan would be to remove them entirely.

ATTIC.

Above the second story there is a large, open attic intended as a temporary covering until such time as a third story should be added. The beams are of wood, with an occasional steel girder. The floor is of wood, and so roughly laid that at places it is possible to look down through the cracks to the corridor of the floor below. There are a few pieces of furniture stored there, but for the most part the attic is empty. A wooden stairway with door at the foot leads to the attic. There are no handrails, and at the top instead of a protective wall or railing the stair well is shut off by a row of old chairs laid on their sides around it. A closet is placed under the stairway.

It is evident that within a comparatively short time a third story must be added to the Manual Training High School. This report urges that the addition be made with a flat roof instead of pitched. It is, of course, desirable to keep the appearance of all the public buildings around the square more or less in accord, but if the new Junior and Senior High Schools are properly planned they also will be finished with flat roofs. The flat roof furnishes opportunities for overhead lighting, roof gardens, or playgrounds, is less expensive to build, and far safer in case of fire. It would hardly be a defensible policy to erect all three new buildings on an obsolete plan in order that they might harmonize with the peaked roof of the gymnasium.

FIRE ESCAPES.

There are two fire escapes on the Manual Training building. One is at the rear towards the southern corner. It is in a brick tower, and goes from the second story to the ground. There is

no connection with the roof. The stairway is of metal, not quite three feet wide, and is on the spiral plan, so that every step is a sharp wedge. This means that only about half of the tread is wide enough to furnish a good foothold. There are no hand-rails, and the stair is very dark. It was not an easy matter for the member of the Survey Staff to walk down this fire escape, even when there was no alarm of fire, no crowd, and plenty of time to make the descent. In time of fire it would be positively dangerous.

The other fire escape leads from the cooking room to the roof of the heating plant. It, too, is spiral, but there is no inclosing wall. To reach it it was necessary to go into an adjoining room, find a chair, bring it back to the cooking room, and stand upon it in order to unlock the window and climb through. This fire escape was not designed for purposes of speedy and safe exit.

When a third story is added to the building the need of extra fire escapes will greatly increase. There is at present only one inside stairway. With a third story at least one more must be added. This report suggests that at least one, and preferably two stairways be placed at the ends of the building, in separate fire proof stair towers. These stairs should reach to the roof and should empty directly to the open air. They should be of fire-proof construction throughout, enclosed in fireproof walls, and cut off at each floor by self-closing doors of metal and wire glass. In details of construction they should follow the best practice for regular school stairways. Tower stairs of this kind could be used as regular means of exit; they would be panic proof and fireproof; and would make the best possible outside fire escapes.

LIGHTING.

Through a combination of unfortunate circumstances, most of the rooms in the Manual Training High School are inadequately lighted. The basement rooms are darkened by shrubbery growing close to the walls. Trees cut off much of the light from some of the first floor rooms, while others are darkened by the bath house building. Rooms on the second floor are provided with windows which are curved at the top instead of square cornered. For these

rooms much of the light is necessarily cut off because of the shape and in several cases the upper portion of glass area is covered by shades which are fastened permanently in place. In the large classrooms which are most generously supplied with windows, the glass area is equal to only about 16 per cent of the floor area. In Practical Arts 1 artificial light is used during most of the session. In Practical Arts 2, screens across the center of the room, cut off light from the seats beyond. Even were these removed, the amount of light admitted would be insufficient for close work. In the foundry room are three windows which are badly shaded because of shrubbery. The machine shop is darkened by trees.

As a first step towards remedying these difficulties, the ornamental bushes and trees surrounding the building should either be pruned or removed entirely.

In the second place, light-colored shades should be provided for all windows. These shades should be adjustable, and so arranged that they can be drawn up over the curved tops when desirable. No permanent covering should be allowed over any of the window-glass area.

Third, all walls should be painted buff color. The light green at present used in some of the rooms absorbs too much light.

Finally, wherever possible chairs and desks should be moved close to the windows, and clear space left near the inner walls. Most of the classrooms in the Manual Training High School are about 50 feet long by $37\frac{1}{2}$ feet wide. This almost necessarily means that the parts of the room farthest from the windows receive much less than their share of light. The rooms are higher than the ordinary classroom, but the additional window height is of little help because of the curved tops. What light there is can be utilized best by moving chairs and desks as close to the outer wall as can be arranged without serious crowding.

When the third story is added to the present building a great deal of ingenuity will be necessary to devise a plan whereby each room may be supplied with window glass equal in area to at least one-fifth and if possible one-fourth of the floor space, and yet the outside of the addition may harmonize fairly well with the appearance of the lower stories. The natural tendency will be

to sacrifice the eyesight of the students to the appearance of the building. A better solution should be diligently sought.

HEATING AND VENTILATION.

No special tests were made of the heating and ventilation of the Manual Training High School. The general impression gained during visits in December was that the building was uncomfortably hot, and temperature records for December 8 showed 73° F. for the machine workroom and 80° F. for the pattern-making room. Large classrooms are furnished with special ventilating flues, but there is no special means of ventilation for the offices or other small rooms. Here direct radiation from radiators must be relied upon for heating and open windows for fresh air. Teachers complain that in order to keep the kindergarten rooms warm enough the rest of the building is regularly overheated. They also speak of difficulty in keeping books and papers clean because of the soft-coal smoke which comes into the classrooms from shop fires in the basement and cinders which blow through the windows from the railroad outside.

TOILETS.

The toilet room in the basement is labelled; those upstairs are not. Toilet accommodations for boys are of fairly good type, and ample in number, although more should be added when the size of the building is increased. Facilities for the girls are seriously deficient in number. There are only three toilet seats for all the girls in the building; and these also have to be used by the kindergarten children. New fixtures should be added as soon as possible. Their number must depend upon the probable number of girls who will use the building under the new plan of administration.

REST ROOMS NEEDED.

There are no rest rooms in the Manual Training High School. Any school which includes women and adolescent girls among its students should provide a room well ventilated, fitted with couches, and with a small toilet room attached where students may retire in case of illness. A similar room should be set aside for the use of women teachers.

KINDERGARTEN.

For many years a kindergarten has been maintained in one of the high school buildings. Efforts to combine it with classes at the Pierce or Lincoln Schools have met with bitter opposition on the part of parents. The two schools mentioned already maintain kindergartens far better equipped and suited to the needs of children than are the two stuffy little rooms on the second floor of the Manual Training building. Moreover, one of these schools is often at a shorter distance from the child's home than the school he now attends.

Some time ago the School Committee suggested fitting up an empty room at the Lincoln School and transferring the high school kindergarten to it. It proposed to provide different rooms and teachers, different hours of opening and closing, and a different play period from that of the other Lincoln kindergarten class; but even with these concessions the opposition seemed to be too strong to be overcome. The School Committee now contemplates erecting a separate building near the high school in order to accommodate this one kindergarten class.

There can be no question concerning the unsuitability of the rooms now used by the kindergarten in the Manual Training High School. They are small, poorly ventilated, and without proper facilities for play. Coatroom space is inadequate and poorly arranged. Children are required to use toilets intended for adults. They are obliged to climb a flight of very steep stairs. In case of a fire it would be extremely difficult to secure their safe and speedy escape from the building. The kindergarten should be transferred to other quarters without delay. To an outsider it would seem the most natural solution of the difficulty to break up the class and distribute the children among other kindergartens already maintained near their homes. If however, the town wishes to go to the expense of providing a special building or special kindergarten rooms in one of the proposed new buildings there is no clear reason why it should not do so; always provided that this use of funds does not penalize less fortunate school children.

GYMNASIUM BUILDING.

Instead of having a gymnasium of their own high school students are granted the use of the public gymnasium for certain hours. The wisdom of this arrangement and the appropriateness of the gymnasium from the physical training point of view are considered in one of the other Survey reports. Brief mention should, however, be made at this point of the fire risks encountered in the public gymnasium building.

The gymnasium is not fireproof. Floors are of wood, and wooden stairs, unenclosed, and with dangerous wedge-shaped treads lead from floor to floor. There is a scarcity of shower baths and dressing rooms; but even with the present number every available corner is utilized. Some girls have to climb four flights before they can reach their dressing rooms.

If fire should start in the gymnasium building while girls were in the process of bathing and dressing it would almost be a miracle if all escaped unhurt. At the cry of fire there would be a concerted rush for the stairways. Articles of clothing would be dropped, where they would catch the feet of hurrying girls. The stairways are so poorly constructed that if 20 or 30 girls tried to rush down in a body almost surely some one would stumble. In case the fire gained any headway the stairways would be filled with smoke and girls already frightened would become panic stricken.

If they succeeded in reaching the foot of the stairs their way would be locked by the iron gates which divide the entrance hall and are usually kept locked. They would have to go through the narrower gateway, one or two at a time, before they could even reach the outer doors; and here again two of the three doorways are locked from the inside and could not be used.

A fire alarm box is situated in the main hallway, and its use would probably summon the fire department in time to save the building, but in case of a panic only fortunate chance would prevent serious accidents and loss of life. So far the town of Brookline has been taking chances. How long does it wish to continue the same policy?

Summary and Recommendations.

The gymnasium building is not fireproof. It is several stories high. Badly constructed stairs and entrance combined with serious overcrowding form a fire hazard which should not be allowed in any public building. The gymnasium is not a part of the public school system and the School Committee is not responsible for errors in its construction, but the committee is responsible for the lives of children entrusted to its care. If high school students are to continue using the public gymnasium for the pursuit of regular school activities it devolves upon the school authorities to insist that adequate measures be taken to insure safety in case of an alarm of fire.

SUMMARY OF EXISTING CONDITIONS AND PLANS FOR THE FUTURE.

Mistaken Economy.

In Brookline the erection of new buildings is put off as long as possible. This, unfortunately, is a tendency not uncommon elsewhere, and yet the members of the Survey Staff have more confidence in the innate generosity and common sense of the people of Brookline than to believe that they will be satisfied with anything less than the best. They believe that Brookline wants her children to be housed in buildings which are adapted to modern pedagogical methods, properly heated and lighted, and safe in time of fire. Moreover, the Survey Staff believes that Brookline is not only able, but willing, to pay the necessary price in order to secure these things.

If the school authorities will adopt a systematic, well-thought-out building policy, so that new houses shall be erected when they are needed, where they are needed, and according to the most approved modern plans, the Survey Staff believes that Brookline will gladly approve the necessary expenditure.

Architects Should be School Specialists.

Twenty years ago buildings were already being erected with unilateral lighting, flat roofs, fireproof stairways in separate stair

towers, sunken wardrobes, first floor auditoriums, dispensaries, gymnasiums and shower baths.

Few people realize what amazing developments have taken place in school architecture during the past three decades. The planning of school buildings has become a highly specialized field. It is no longer possible for an architect whose specialty is planning churches, office buildings, factories or courthouses, to step into the field of school architecture and render satisfactory service. If Brookline wishes modern schools she must secure the services of architects who know how to build them.

Old Errors Copied in New Buildings.

It is not only the older buildings of Brookline which show archaic features of school architecture. Evidence that expert advice is still lacking is found in the fact that buildings recently erected repeat errors committed long before. For example, all of the old buildings show pitched roofs, and so also do all the new buildings. Lighting from two sides is found in some of the rooms of the Devotion grammar, which is less than three years old. The Heath School shows windows with curved tops. Stairs and exits in all buildings are all of the old type; most of them are made of wood and none is inclosed in a fireproof tower.

The Runkle and Devotion Schools are built on the cottage plan: each has three separate buildings, connected by underground passages. There are two serious disadvantages to such an arrangement. In the first place, the first cottage to be erected sets the style for each of the others. For example, the architects employed to build the Devotion grammar state that they would have preferred a flat roof but adopted the old-fashioned pitched roof because the primary was already built that way. Thus, where the cottage plan is used, economy, safety and convenience must often be sacrificed in order to secure outward conformity.

The second disadvantage of the cottage plan is that it makes no satisfactory provision for further additions. Each building is apt to cut off light from classrooms in the others, and the more wings or separate buildings are added the more difficult it is to secure proper lighting for all. In view of these very real dis-

advantages, Brookline is advised to discontinue her policy of erecting schoolhouses on the cottage plan.

The School Census an Aid to Building.

In spite of a common belief to the contrary, the population of Brookline is steadily increasing. As time goes on, more buildings will be needed, and if these are to be properly placed it is necessary for the School Committee to know what parts of the town are growing most rapidly, and where population is stagnant.

The Committee should not depend upon popular belief or guesswork in formulating its building policy. By taking school census reports and comparing them year by year it is possible to predict movements of population with considerable accuracy. The Committee should, therefore, plan to make regular and careful comparative studies as a basis for deciding when and where schools should be erected and how many rooms they should contain.

Remaking Old Buildings.

There is no thoroughly up-to-date building in the Brookline system. The Devotion grammar comes the nearest to fulfilling modern requirements, but even here we find lighting from two sides, auditorium without direct exits and with flat instead of slanting floor, stairs which are not shut off from the rest of the building, a pitched roof and an attic. No other building meets even the standard set by the Devotion grammar.

The Lincoln primary, grammar and annex, Sewall, Parsons, Cabot, Longwood and Lawrence are of antiquated design and so seriously dangerous through lack of fire protection that their continued use without change places the lives of the children in jeopardy.

It is recommended that in the Manual Training, Devotion primary and intermediate, Pierce grammar, Pierce primary, Runkle and Cabot Schools special measures be taken completely to isolate the heating plant from the rest of the building and to provide ample exit facilities in panic-proof, fireproof stairways or modern outside fire escapes. It may be found wiser to send the few children who now attend the Cabot School to the Devotion

rather than to spend the amount of money and effort which is necessary if the Cabot School is to be rendered safe.

Longwood.

The Longwood School is close to the Brookline boundary and is run practically for the benefit of Boston children. It is a wooden building of old-fashioned type. Its sanitary arrangements are unsatisfactory, and it would readily burn down. In the opinion of the Surveyors, use of the Longwood School should be discontinued.

Lawrence.

The Lawrence School is one of the worst buildings in Brookline. Lighting is inadequate, so that most of the children are subjected to eye strain most of the time. Blackboards are of plaster. Seats and desks are for the most part of old style and non-adjustable. Gusts of wind blow in through cracks, and temperature is uneven in different parts of the room. Stairs are of dangerous type. The fire escape is almost useless. The heating plant is a constant source of danger. Toilets are dark and at times ill-smelling. The basement floor is damp. There is no proper provision for the care of teachers, principal or sick children. Many of Brookline's best people received their education in the Lawrence School, and its memory is dear to their hearts, but they should not utilize it as a place where present generations must be taught.

Sewall, Parsons and Lincoln.

The Sewall, Parsons and Lincoln Schools are on three points of the circumference surrounding what is known as the Walnut Hill region. The Sewall and Parsons are almost on the edge of town. They are small primary schools of antique model, unfitted for modern educational work, and seriously liable to burn. To render them sufficiently safe for children to attend would entail an expenditure out of proportion to their value.

The Lincoln grammar, and annex, is a large rambling building in which, because of the southern exposure, it is impossible

to secure proper lighting conditions. Seats and desks are old and many of them non-adjustable. Blackboards are in poor shape. At times it is almost impossible to warm certain rooms, while others become excessively hot. Toilets are dark and ill-smelling. Cellar floors are damp and plaster falls from the ceiling. There is no direct connection between the basements of the grammar, shop, and annex, and to go from one to the other the janitor is obliged to climb to the second story or else go outdoors. The fire escape is unsafe. Examination of the basement disclosed conditions of fire hazard so extreme as to call for drastic action.

The Lincoln primary, directly across the street, is situated between a street car line and the steam railroad. If windows on the south are open class work is drowned by the noise of passing vehicles. If those on the north are opened the roar of trains and clouds of smoke again interfere. Rooms are wide and shallow, so that teachers have great difficulty in conducting classes. Blackboards are in very bad condition, improperly located and too high for children to use. Rooms are insufficiently lighted and there is constant glare on the southern side. The air is excessively hot and dry. Toilet conditions are absolutely unadapted to the use of young children, and would be exceedingly undesirable for children of any age. The stairs are so dark that children do not dare to go down alone; and there is no artificial light in the building. Fire conditions in the basement are so bad as apparently to constitute a dereliction of duty on the part of the local fire marshal.

New Elementary School Needed.

The Parsons, Sewall, Lincoln grammar, and Lincoln primary are four of the worst buildings in Brookline. They are all situated near together, and draw their pupils from the most crowded part of the town. Many of these children come from close to the poverty line, where there are few opportunities to learn the niceties of living, and great need for systematic instruction in matters of conduct and hygiene. It is to these children whose need is greatest that Brookline has given its worst school buildings.

In view of these conditions this report recommends that the town of Brookline secure a site as near the Village square as possible, and erect thereon a large public school building of the most approved modern type, amply provided with auditorium, library, gymnasiums, shower baths, playrooms, lunchroom, and dispensary, and so arranged that it may be utilized to its fullest capacity as a community center for the families living near. There is probably no single investment which the town could make more likely to result in improved social conditions than this placing of a socialized modern school in the heart of what is commonly spoken of as "the Brookline slums."

Newton Street School.

The Newton Street School is probably one of the oldest school buildings still in use in the United States. It was built in 1768 and enlarged in 1839. It is situated at a long distance from the center of the town, in that part of Brookline which is given over to large estates. The Survey Committee believes that it should be closed, and that the few children who attend should be taken in wagons to the Heath School, where they would receive better educational opportunities.

The Newton Street School is a one-room building. It stands at one side of the road, facing south, and banked on the west and east by a thickly wooded hill. Windows are on all four sides. Heating is by means of an old-fashioned iron stove. There is no running water, and water for washing and drinking purposes is brought from next door. Fuel bin and toilets are in sheds attached to the main building. The building is in fairly good repair; but many changes should be speedily made if it is to be continued in use.

Changes Needed at Newton Street.

1. Front windows should be closed by opaque shades or blackboards.
2. Blackboards are now of several materials. Slate should be installed throughout, and placed 24 inches from the floor instead of five feet four inches as they are now.

3. A modern jacketed stove, such as is now frequently required by law for rural schools, should take the place of the old-fashioned stove now in use.

4. Water should be piped to the building.

5. Modern toilets with water flush and sewer connection should be installed at once.

Whether or not the town is justified in maintaining a class at the Newton Street School is not a question pertaining to this report. It is certain, however, that if the school is to be run the changes outlined above are essential for the health of its children.

Residents of the Chestnut Hill section have petitioned for a primary school consisting of a kindergarten and three grades in their immediate neighborhood. In December, 1916, there were children in the Heath School in these grades as follows:

<i>Chestnut Hill Section</i>		<i>Heath School Section</i>		<i>Total in Heath School</i>	
Kindergarten.....	14	Kindergarten.....	24	Kindergarten....	38
Grade I.....	16	Grade I.....	22	Grade I.....	38
Grade II.....	12	Grade II.....	24	Grade II.....	36
Grade III.....	20	Grade III.....	19	Grade III.....	39

To separate the children of these grades as proposed while the numbers remain approximately as at present would diminish the efficiency of the work and thus subtract from the advantage which the children of these classes now enjoy. Classes of approximate size are now possible consisting of a single grade. This would no longer be true if the proposed primary school were opened, but a mixing of grades would be necessary. The time may come when the petition can be granted without detriment to the interests of the children concerned, but in the opinion of the Survey Staff that time has not yet come.

Complaint is made that the children suffer inconvenience in making the trip to and from school. If this is true, a remedy may easily be found in changing the mode of transportation. Motor-driven barges are now on the market which provide for warmth and complete protection from inclement weather, while making such speed as greatly to reduce the time required for the trip.

It is here recommended that the organization of a separate primary school for the Chestnut Hill section be not undertaken at the present time.

Junior High School.

In other of the Brookline Survey reports the suggestion has been made that a Junior High School should be established. This plan would take away from the grammar schools some of the upper grades, house them in a central building, and make their former rooms available to Brookline children who now attend the Lawrence, Longwood and Cabot Schools, all of which are unsuitable.

It will probably be desirable to locate the new Junior High School building on the same square as the Senior High School, Manual Training building, gymnasium and bath house, because this location would make it possible for students to use the Manual Training building for shop work. It may also prove desirable, upon the advice of a competent heating and ventilating engineer, to connect the Junior High School building with the central heating plant.

The Junior High School should be independent of other organizations in rooms and equipment. That is, it should have an auditorium of its own, instead of being obliged to use that of the Senior High School. There should be two gymnasiums so that classes of boys and girls can be conducted simultaneously without being obliged to adjust periods to the already overcrowded schedule of the public gymnasium. In the same way the new building should include library and study room, lunchroom, rest rooms, dispensary, etc., for the sole use of Junior High School students.

Manual Training Building.

The Manual Training Building was originally planned to be a three-story structure. In order to accommodate students of the Junior High School it will probably be necessary to add the third story within a comparatively short time. An earlier section has pointed out the imperative necessity of planning this addition

in such a way that every classroom will receive adequate light. If the plan of the first two stories is followed it will be impossible to secure satisfactory lighting conditions. It is urged that the most careful attention be given this matter, and that plans be submitted to expert scrutiny before building operations are undertaken.

More careful safeguards must be taken against fire. The entire first floor should be made of concrete or other fireproof material, and at least one additional stairway placed at the east end of the building in an isolated fireproof stair tower, so that it may serve both as an additional stairway and as a means of escape in case of fire.

Senior High School.

There is no way of remaking the old high school building so that it will give satisfactory service. No scheme of cutting classrooms in two or partitioning off the ends of corridors can be satisfactory because the original plan did not contemplate or allow for such changes. The heating and ventilating in such classrooms as have been added in this way is and always must be unsatisfactory, and effective lighting cannot be secured so long as the old walls remain standing. Money invested in the present building beyond that which is necessary to render it temporarily habitable will be an exceedingly unprofitable investment.

As soon as the Junior High School is built first-year high school classes will be transferred to it, and the over-crowded conditions in the present high school building will be greatly relieved. As soon as possible after the transfer of these pupils, certain rooms where light and ventilation are most seriously deficient, should be closed for regular class purposes. One of these should be made into a teachers' rest room, and another into a rest room for girl students. All lockers should be removed from classrooms, and places found for them elsewhere. Better provision should be made for the disposal of outside wraps. An iron fire escape of modern design should be installed near each end of the building. With these changes the present building may be continued in use until a new one can be built.

Brookline should begin the erection of a new Senior High School building within the next five years. Since the same location is probably desirable, it will be necessary to plan the building in sections and put up one part at a time, so that class work will not be interrupted.

It is essential in planning a new school building to provide for school activities as they will actually be carried on. It is extravagant to provide classrooms holding 50 students if only 20 students are to be taught there. Classrooms in elementary schools are all of the same size because, as at present organized, most elementary teachers have almost 40 pupils each, but in the high school classes are apt to vary all the way from 16 or 20 to 40, depending upon the particular method of administration followed.

In the report of the Special Committee on High School and Manual Training School Accommodations there is an attempt in Appendix V to find out how much each classroom in the high school was actually used. This is a step in the right direction; and a similar, although somewhat more detailed, study should be made of class schedules under the Senior High School plan in order to furnish the architect with data so that he may secure the most economical arrangement of floor space, and make allowance for future growth.

Building Policy Needed.

If the recommendations of this report are carried out they will entail rather elaborate and extended building activity. Early and positive action is necessary if Brookline is to secure a school plant of which she need not be ashamed. The School Committee should map out a definite building policy covering at least the next five years, and steps should be taken to insure that it will be carried through. This plan should include provisions for:

1. Securing the services of an architect who specializes on school buildings and is of recognized high standing in this branch of his profession.
2. Erection of a Junior High School building.
3. Repairs and alterations on Elementary, Manual Training and Senior High School buildings to render them sanitary and safe.

4. Erection of a new elementary school to take the place of Sewall, Parsons and Lincoln.

5. Erection of a Senior High School.

6. Addition of a third floor to the Manual Training building.

Nothing is here recommended beyond what would be considered essential in any like community of well-to-do people. By reason of her exceptional wealth, Brookline can carry out an extensive building program with the minimum of embarrassment. If she is willing to give thought and money and energy to solving her building problem, she can within a decade take her place as the leader among the really progressive communities in the United States.

CHAPTER V.

SCHOOL POPULATION.

THE SCHOOL CENSUS.

As has been shown in Chapter I, the number of young people in Brookline is unusually small, in fact, the smallest proportion of all cities in the two groups chosen for comparison according to the United States Census for 1910 — 12.9 per cent for those from five to 14 years inclusive, and 19.3 for all below 15 years of age.*

The school census of Brookline has been taken annually upon September 1 for many years. For 1915 the census age was changed by law from five to 14, inclusive, to five to 15, inclusive. Owing to a later law, revising the plan for the taking of the census and changing the time from September to April, no census was taken in September, 1916. The data for each census from 1901 to 1915, inclusive, are furnished in Table 1. The census figures for 1915 are for the years from five to 14, inclusive, in order that proper comparison may be made.

It will be observed from a study of Table 1 and its accompanying diagram that the increases in enrollment and in average membership in the day schools are more even than the increase in the census. This is due, undoubtedly, to the omission of some children or more likely the omission of more children at one time than at another. More will be said about this matter in another connection.

This table also reveals the wide difference between the percentage of increase in total population and in school population during the past 15 years. The former was 68 per cent (from

*The school census and United States Census do not agree upon the number of children five to 14 in 1910. The school census figure is 3740; the United States Census 3585 — a difference of 155. Even so, the conclusion regarding the small proportion of children still holds.

TABLE NO. 1.

CENSUS, ENROLLMENT AND AVERAGE MEMBERSHIP 1899-1916.

School Year	<i>Children Enrollment</i>		<i>Average Membership</i>					
	<i>of School Age</i>	<i>of Day Schools</i>	<i>All Day Schools</i>	<i>High Schools</i>	<i>Total</i>	<i>Elementary School</i>		
						<i>Grades IV-IX</i>	<i>Grades I-III</i>	<i>Kindergarten</i>
1899-1900	3032	3604	3000	319	2681	1384	976	321
1900-1901	3060	3635	3084	326	2758	1501	912	345
1901-1902	3193	3703	3189	346	2500	1533	967	343
1902-1903	3309	3883	3358	373	2985	1637	1017	331
1903-1904	3396	4024	3547	391	3156	1726	1067	363
1904-1905	3486	4194	3686	424	3262	1727	1154	381
1905-1906	3611	4247	3682	433	2914	1803	1111	335
1906-1907	3614	4307	3755	424	3331	1869	1117	345
1907-1908	3619	4274	3750	496	3254	1859	1046	349
1908-1909	3656	4268	3770	527	2890	1882	1008	353
1909-1910	3740	4191	3590	514	3176	1834	1020	322
1910-1911	3798	4298	3744	542	3202	1833	1045	324
1911-1912	3878	4273	3752	528	3224	1828	1081	315
1912-1913	3958	4470	3874	529	3345	1908	1077	340
1913-1914	3956	4567	3970	608	3362	1931	1099	332
1914-1915	4107*	4702	4140	717	3423	1962	1115	346
1915-1916	....	4787	4193	760	3433	1978	1107	348

19,935 in 1900 to 33,490 in 1915) while the latter was but 36 per cent (from 3032 to 4107).

The census for 1915 in detail is as follows:

TABLE NO. 2.

SCHOOL CENSUS BROOKLINE, 1915.

<i>Ages</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
5 and 6	350	365	715
7 to 13	1446	1478	2924
14 and 15	430	420	850
Totals	2226	2263	4489

*The census for this year was 4889. In the previous census, 1914, 8.5% were 15 years of age. Assuming the same per cent were of this age in 1915, we obtain 4107 as the number five to 15 years of age.

CENSUS AND ENROLLMENT.

It is impossible to state with accuracy from the data available how many of the children of school age actually attended the public schools, how many attended other schools, and how many attended no school at all during all or any of these years.

The number attending private schools in November, 1916, was, so far as reported, as follows:

St. Mary's Parochial School, Brookline.....	654
Miss Park's School, Brookline.....	85
Longwood Day School, Brookline.....	34
Mr. River's Open Air School, Brookline.....	15
Noble and Greenough's School, Boston.....	32
Brimmer School (Miss Cummings), Boston.....	29
Miss Cushman's, Chestnut Hill, Newton.....	48
Country Day School, Newton.....	26
Fessenden School, West Newton.....	3
Total.....	926

For the purpose of reaching the closest practical accounting of Brookline's children with such data as are at hand, the number of children of school age, five to 15, inclusive, upon September 1, 1916, may be assumed to be as many more than in September, 1915, as the average annual per cent of increase from 1900 to 1915 — 2.35 per cent. This gives 4593 as the estimated number of census children at the beginning of the present school year. We know positively that 3075 pupils in the elementary schools and 154 in the high school enrolled up to November, 1916, were of these ages. Assuming that one-half of the kindergarten children were five years old upon the census date, 141 must be added to the above figures, making a total of 3370 of census age. Assuming that the number of non-residents is the same as last year, and subtracting the 171 in the elementary schools, leaves 3191 as the approximate number of Brookline children of census age in the public schools. To this number should be added those who will enter late; 250 would be a fair estimate as determined by previous years' records, bringing the number up to 3441. Now if to this estimated total enrollment in the public

schools of children who were in Brookline upon September 1, 1916, be added the total enrollment of Brookline children in the parochial and private schools, 926, increased by 70 for late enrollment to 996, it follows that approximately 4437 of approximately 4592 census children will be in school at some time during the year. Possibly 75 may hold working certificates, which still leaves a balance of 80 to be accounted for by legal exemption or otherwise.

From this it may be tentatively concluded that probably practically all of Brookline's children of school age are enrolled in some school during the school year except those legally employed or exempted from attendance.

DISTRIBUTION OF THE ENROLLMENT.

The next question that naturally arises concerns the distribution of this enrollment among the various departments and grades of the school. Referring to Table No. 1 and its accompanying diagram, it will be seen that the average membership of all schools and the school census have increased practically together, but that such would not have been the case had it not been for the increased membership in the high schools. For the average membership in the elementary schools falls a trifle short of increasing as rapidly as the census children, while that of the kindergarten has failed in an unusual degree to do so. In fact, their increase from 1900 to 1915 was less than one per cent, while that of Grades I to IX was 30 per cent, and of the high school 125 per cent. The increase in school population was 36 per cent.

The distribution of the pupils among the various grades in the elementary schools, high schools, and School of Practical Arts, taking those who had been enrolled up to November 3, 1916, is shown in Table No. 3.

The pupils of the elementary grades are distributed among 12 buildings with number of grades, classes and pupils as given in the accompanying table. The data are for November 24, 1916, and represent fairly well the maximum size of classes. The elementary buildings are divided into six groups, each with a grammar school and followed by such primary schools as are

feeders to it. The Devotion and Pierce Schools have no primary schools connected with them in this way.

TABLE NO. 3.

ENROLLMENT OF THE SCHOOLS OF BROOKLINE.

<i>Grade</i>	<i>Enrollment</i>	<i>Per cent of Total</i>
I	364	10.0
II	371	10.0
III	321	8.0
IV	367	10.0
V	379	10.0
VI	331	9.0
VII	346	9.0
VIII	311	8.0
IX	290	8.0
Total	3080	82.0
X	235	6.0
XI	212	5.5
XII	160	4.0
XIII	97	2.5
Total	704	18.0
Total elementary and high	3784	100.0

TABLE NO. 4.

DISTRIBUTION OF PUPILS AMONG BUILDINGS, GRADES, AND CLASSES IN ELEMENTARY SCHOOLS.

<i>Buildings</i>	<i>Grades</i>	<i>Classes</i>	<i>Membership at Date</i>	<i>Average per Class</i>
Devotion	I-IX	18	600	33
Heath	I-IX	9	335	37
Newton	I-III	3	10	33
Lincoln	I-IX	15	484	32
Parsons	I-II	2	52	26
Sewell	...	3	91	30
Pierce	I-IX	19	665	35
Runkle	I-IX	11	411	37
Driscoll	I-VI	6	216	36
Lawrence	IV-IX	6	213	36
Cabot	I-III	3	73	24
Longwood	I-III	3	82	27
Totals		98	3232	33

<i>Kindergarten</i>	<i>Number of Teachers</i>	<i>Membership</i>	<i>Pupils per Teacher</i>
Devotion	2	33	17
Heath	2	38	19
Lincoln	2	39	20
Parsons	3	46	16
Sewall	2	23	12
Pierce	2	39	20
Driscoll	2	24	12
Cabot	2	25	13
High School	2	18	9
Totals	19	285	15

The average size of the classes in the elementary schools as shown in the above tables is favorable to the Brookline schools. In order to accomplish the best results it is commonly believed that classes should not have more than 30 pupils. While the figures above show that practically 70 per cent of the classes exceed this standard, yet when the principals in each of the six grammar schools and the general assistants in four others are reckoned as among those teaching the average number of pupils per teacher is reduced to 30, which has been the standard in Brookline for the past few years. Of the 95 classes one has less than 20 pupils, 24 have 20 to 29, 52 have 30 to 39, and 18 have 40 to 47. The Newton School is not included in this summary.

ATTENDANCE.

The record of the Brookline schools in the matter of attendance of those enrolled is low when compared with schools of other Massachusetts towns of the same group. Of the 70 towns, Brookline is one of eight in 1912-13 having the lowest per cent of attendance. In the following year five had a lower percentage and 17 others the same.

The reason for this low standing is poor attendance in certain schools. The records for several schools are high. In 1915-16 one-half the pupils in the Lincoln and Pierce Schools attended over 180 of the 187 days. Applying this same standard, number of days attended by one-half the pupils, to schools upon the other

extreme it is found that the record of the Cabot School was 30 days less; of the Driscoll, 24 days less; of the Longwood, 18 days less; and of the Runkle and Parsons 15 days less. The record for each of the schools is as follows:

TABLE NO. 5.

MEDIAN NUMBER OF DAYS ATTENDED BY PUPILS ENROLLED
1915-16.

<i>School</i>	<i>Median</i>	<i>School</i>	<i>Median</i>
Lincoln	180.8	Newton	167.5
Pierce	180.1	Runkle	165.8
Heath	178.7	Parsons	165.5
Devotion	175.7	Longwood	162.8
Lawrence	172.3	Driscoll	156.8
Sewall	170.9	Cabot	150.4

It is interesting to note that the schools having the poorest records are attended by the children of the more intelligent and well-to-do parents, while the three schools at the head of the list are in the less-favored residential sections of the town. It would seem that much of the absence is unnecessary and the School Committee would be warranted in taking such action through its Superintendent, principals, and, if necessary, the attendance officer, as would correct this situation.

AGES AT WHICH PUPILS WILL COMPLETE THIS SCHOOLING.

The next question for our consideration is whether the pupils are making such progress through the schools as will enable them to have the amount of education which is considered desirable before they quit school permanently. In order to answer this question the standards for age in each grade that have come to be accepted must be applied. These standards are arranged so as to provide for the completion of the elementary school before the pupil reaches the age of fifteen. The standard or normal ages given below are adjusted to the nine-year elementary school course. If a pupil enters or completes a grade within the age limits specified as normal and continues to make the usual progress

of one grade each year, he will then have completed the elementary school sometime between his fourteenth and fifteenth birthdays.

TABLE NO. 6.

NORMAL AGE.

<i>Grade</i>	<i>For entering grade</i>	<i>For completing grade</i>
I	5 years up to 6	6 years up to 7
II	6 years up to 7	7 years up to 8
III	7 years up to 8	8 years up to 9.
IV	8 years up to 9	9 years up to 10
V	9 years up to 10	10 years up to 11
VI	10 years up to 11	11 years up to 12
VII	11 years up to 12	12 years up to 13
VIII	12 years up to 13	13 years up to 14
IX	13 years up to 14	14 years up to 15
X	14 years up to 15	15 years up to 16
XI	15 years up to 16	16 years up to 17
XII	16 years up to 17	17 years up to 18
XIII	17 years up to 18	18 years up to 19

The standards used hereafter in this study are, of course, those for entering the grade and the ages recorded are those of September 1, in accordance with the prevailing practice.

The data for this study were gathered by the teachers from the cumulative individual record cards — the so-called “blue cards” — and the ages given are those there recorded. In the high school, however, because of the absence of such cards, the pupils were relied upon for the statement of their ages and also for the years in school. The pupils in the School of Practical Arts are not included.

The great differences between schools in these respects are striking. Inasmuch as the lower grades have fewer over-age pupils and likewise fewer under-age pupils than the upper grades, it is best for comparative purposes to group the buildings together, merging each primary school with the grammar school to which it sends its children. The tables showing these schools, thus combined together with the age data by grades, follow. The data for each school separately are furnished in the Appendix, Table No. 8.

TABLE NO. 7.

NUMBER AND PER CENT OF PUPILS WHO ARE OVER AGE,
NORMAL AGE AND UNDER AGE BY GROUPS OF
BUILDINGS AND OF GRADES, 1916-17.

	Number Counted	Under Age	Normal Age	Over Age	% Under Age	% Normal Age	% Over Age
Devotion.	577	49	236	292	8.5	41.0	50.5
Heath and Newton.	337	4	109	224	1.0	32.5	66.5
Lincoln, Parsons, Sewall.	592	10	245	337	2.0	41.0	57.0
Pierce.	651	25	277	349	4.0	42.5	53.5
Runkle and Driscoll.	606	33	240	333	5.0	40.0	55.0
Lawrence, Cabot, Longwood	317	17	118	182	5.5	37.5	57.0
Total.	3080	138	1225	1717			
1st Grade.	364	0	221	143	...	60.5	39.5
2nd Grade.	371	8	194	169	2.0	52.5	45.5
3rd Grade.	321	11	132	178	3.5	41.0	55.5
4th Grade.	367	16	127	224	4.0	35.0	61.0
5th Grade.	379	14	118	247	4.0	31.0	65.0
6th Grade.	331	16	102	213	5.0	31.0	64.0
7th Grade.	346	21	125	200	6.0	36.0	58.0
8th Grade.	311	31	105	175	10.0	34.0	56.0
9th Grade.	290	21	100	169	7.0	34.5	58.5
Totals.	3080	138	1224	1718			
1st Year High School.	198	7	53	138	3.5	26.5	70.0
2nd Year High School.	196	10	50	136	55.0	25.0	70.0
3rd Year High School.	145	12	46	87	8.0	32.0	60.0
4th Year High School.	97	2	35	60	2.0	36.0	62.0
Totals.	636	31	184	421			
Grades 1 to 9.					5.	40.	55.
Grades 10 to 13.					5.	29.	66.

When comparison is made with other cities for which comparable* data can be found, it is learned that none of the 32 cities has so small a percentage of under-age or so large a percentage of over-age pupils in its elementary schools. In other words, fewer pupils in Brookline will complete their common school education at any early age, and a larger number will complete it at a later age than in any other of these cities.

The position of Brookline elementary schools as regards under-age and over-age is shown in the accompanying tables.

TABLE NO. 8.

CITIES ARRANGED IN ORDER OF THEIR RANK ACCORDING TO PERCENTAGES OF PUPILS IN ELEMENTARY SCHOOLS WHO ARE UNDER AGE, TOGETHER WITH SCHOOLS OF BROOKLINE.*

<i>Cities</i>	<i>Per Cent Under Age</i>	<i>Cities</i>	<i>Per Cent Under Age</i>
1. Quincy, Mass.	50	18. Schenectady, N. Y.	26
2. Amsterdam, N. Y.	49	19. Topka, Kan.	26
3. Syracuse, N. Y.	42	20. Reading, Pa.	25
4. Danbury, Conn.	38	21. Muskegon, Mich.	25
5. Elmira, N. Y.	38	22. Watertown, N. Y.	25
6. New Rochelle, N. Y.	36	23. Elizabeth, N. J.	23
7. Indianapolis, Ind.	34	24. East St. Louis, Ill.	22
8. Niagara Falls, N. Y.	31	25. Hazelton, Pa.	22
9. Trenton, N. J.	31	26. New Orleans, La (White).	20
10. Plainfield, N. J.	30	27. Montclair, N. J.	18
11. Racine, Wis.	30	28. Passaic, N. J.	17
12. Canton, O.	28	29. Kenosha, Wis.	16
13. Danville, Ill.	28	† Des Moines, Report 1915.	13
14. Milwaukee, Wis.	28	† Altoona, Report 1915.	13
15. Rockford, Ill.	28	† Butte, Survey.	7
16. Bayonne, N. J.	27	† Brookline.	4
17. Perth Amboy, N. J.	27		

*Comparable data are those which observe the same normal age limits as given in the table for normal age furnished above.

†All cities except those starred are taken from Ayres study — Russell Sage Foundations Bulletin 108. Corrections of the Brookline figures because of difference in time at which data were gathered do not alter Brookline's position materially.

TABLE NO. 9.

CITIES ARRANGED IN ORDER OF THEIR RANK ACCORDING TO
PERCENTAGES OF PUPILS IN ELEMENTARY SCHOOLS WHO
ARE OVER AGE, TOGETHER WITH SCHOOLS OF
BROOKLINE.*

<i>Cities</i>	<i>Per Cent Over Age</i>	<i>Cities</i>	<i>Per Cent Over Age</i>
1. Quincy.....	19	18. Reading.....	40
2. Amsterdam.....	28	19. Perth Amboy.....	41
3. Racine.....	28	20. Bayonne.....	42
4. Indianapolis.....	29	21. Hazelton.....	42
5. Syracuse.....	29	22. Watertown.....	43
6. Danbury.....	31	23. East St. Louis.....	44
7. Milwaukee.....	31	24. Schenectady.....	44
8. Rockford.....	32	* Des Moines.....	45
9. Canton.....	34	25. Elizabeth.....	46
10. Elmira.....	34	26. Kenosha.....	48
11. New Rochelle.....	34	27. Montclair.....	48
12. Muskegon.....	35	28. New Orleans (White).....	49
13. Niagara Falls.....	36	* Altoona.....	50
14. Topeka.....	36	29. Passaic.....	51
15. Danville.....	38	* Butte.....	51
16. Trenton.....	38	* Brookline.....	56
17. Plainfield.....	40		

*See note under Table 8.

The significance of this situation to the children of Brookline in later life is of great importance. The constantly extending scope and refinement of knowledge, the ever increasing competition, and the continual raising of standards for entrance into vocations and for success in them have operated to prolong the length of schooling. This is in conflict with the desirable social end that preparation for vocations and apprenticeship in them should be completed in time for the living of a fully satisfying life as an effective member of the family and community. The completion of the elementary school and the entrance into the high school before 15 and of the completion of the high school and entrance into college before 19 is as late as these considerations permit. In-

deed even this yields too much rather than too little. College graduation between 22 and 23 and professional courses and apprenticeship beyond have postponed in many cases the gaining of a place in life to such a late age as to cause heart-burnings and disappointments.

Furthermore, experience and study have both shown that it is the over-age boy and girl who drop out of school before completing the elementary course. Having passed beyond the period when the compulsory laws can hold them, they pass out into life without sufficient preparation. A school cannot be said to be doing its duty to society unless it adapts its organization of classes and its Course of Study to meet the needs of this large class of children.

The presence of over-age children in the same class with those of normal and under-age, especially if the differences are large, prevents the attainment of that homogeneity which is essential to the highest efficiency in class teaching and management.

This is a matter to which the School Committee, officers and teachers of Brookline should give serious and immediate attention. Such a condition of affairs is entirely inconsistent with the standing of many of the parents in literary, professional, commercial and industrial life. To what is it due? To what extent are the schools responsible?

One of the reasons is that some pupils start to school at such a late age that if they make the usual progress it is impossible for them to complete the elementary course of nine years before their fifteenth birthday. In order to finish before this time, they must enter before they become six years of age — that is at five. Of the pupils in the elementary schools in November, 1916, approximately 29 per cent entered school between their sixth and seventh birthdays, while 4 per cent entered later. That is approximately one-third of the pupils enter so late that they cannot by regular progress complete the nine-year elementary school at or before the age that is considered desirable.

Both the parents and the schools are responsible for this lack of co-ordination which produces this result. Parents should start their children in time as required by the length of the Course

of Study and, on the other hand, the school should adapt the length of the Course of Study to the sentiment of the people regarding the time that their children should enter school. When so large a proportion as one-third enter beyond the normal time it is incumbent upon those in charge of the schools to make such an adjustment in their organization as will enable them to make up time.

The second reason for this condition is that pupils lose time through prolonged absence after entering school. About 14 per cent of the pupils in the elementary schools who originally entered on time have lost a half year or more at one or more times. This has the same effect as late entrance. The responsibility is again a shared one between the pupils and the school.

Is the school organization adapted to the making up of time on the part of pupils who enter late? The data gathered show that of the 47 per cent of pupils who either entered late or lost time, 11 per cent did gain time, 47 per cent progressed at the rate of one grade each year, while 21 per cent (almost twice as many as those who gained) made slow progress.

A third reason is the nine-year elementary school course. If the course were of eight years only and if pupils should continue to start to school at the same ages as now, and if no more time were lost than now by prolonged absence, and if they continued to progress as regularly, the per cent of over-age pupils in Brookline would be among the smallest of all cities in the United States, and the number of under-age pupils would be among the largest. What these percentages would be can be approximated by advancing the normal age for each grade one year and applying it to the aggregate data for pupils enrolled this year. This gives 44.4 per cent under age, and only 19.3 per cent over age. But two cities would have a larger percentage of under-age pupils, and but one city would have a smaller percentage of over-age pupils.

For the nine-year elementary course the school is entirely responsible.

A fourth reason is a seemingly strong inclination upon the

part of the supervising and teaching corps to advance the largest possible number of pupils regularly one grade each year. While they do not encourage and assist many boys and girls to get ahead of their class, on the other hand they do extend all possible assistance and encouragement to those who are having a hard struggle to keep up with their classes. Again for this situation the school is responsible, and not the parents. The results of this policy will be seen from a detailed inquiry into the progress actually made by the pupils.

PROGRESS OF PUPILS.

In the following data regarding the progress of pupils an advancement of one grade each year is considered as normal. Any year in which a pupil was absent 50 per cent or more of his time was not counted in this study unless he was advanced notwithstanding the absence. Furthermore attendance in another school system was charged as the normal length of time that would be required to complete the work.

TABLE NO. 10.

NUMBER AND PER CENT OF PUPILS MAKING RAPID, NORMAL AND SLOW PROGRESS BY GROUPS OF BUILDINGS AND BY GRADES, 1916-17.

<i>Buildings</i>	<i>Rapid Prog- ress</i>	<i>Normal Prog- ress</i>	<i>Slow Prog- ress</i>	<i>Rapid Prog- ress</i>	<i>Normal Prog- ress</i>	<i>Slow Prog- ress</i>
Devotion	81	390	106	14.0	68.0	18.0
Heath and Newton	10	199	128	3.0	59.0	38.0
Lincoln, Parsons, Sewall	1	445	146	2.0	75.0	24.8
Pierce	28	436	187	4.0	67.0	29.0
Runkle and Driscoll	92	451	63	15.0	75.0	10.0
Lawrence, Cabot, Longwood	25	228	64	8.0	72.0	20.0
Total	237	2149	694			

<i>Buildings</i>	<i>Rapid Prog- ress</i>	<i>Normal Prog- ress</i>	<i>Slow Prog- ress</i>	<i>Rapid Prog- ress</i>	<i>Normal Prog- ress</i>	<i>Slow Prog- ress</i>
1st Grade	0	323	41	0.0	89.0	11.0
2nd Grade	5	305	61	1.5	82.0	16.5
3rd Grade	10	234	77	3.0	73.0	24.0
4th Grade	34	262	71	9.0	71.0	20.0
5th Grade	31	258	90	8.0	68.0	24.0
6th Grade	28	212	91	88.0	64.0	28.0
7th Grade	48	191	107	14.0	55.0	31.0
8th Grade	43	187	81	14.0	60.0	26.0
9th Grade	41	174	75	14.0	60.0	26.0
Totals	240	2146	694	8.0	69.0	23.0
1st Year High School	330	122	46	15.0	61.0	24.0
2nd Year High School	35	93	68	18.0	47.5	34.5
3rd Year High School	37	62	46	25.5	42.5	32.0
4th Year High School	9	59	29	9.0	61.0	30.0
Totals	111	336	189	17.0	53.0	30.0

The data for each school separately are given in the Appendix Table No. 9.

TABLE NO. 11.

CITIES ARRANGED IN ORDER OF THEIR RANK ACCORDING TO -
 PERCENTAGES OF PUPILS IN ELEMENTARY SCHOOLS WHO
 HAVE MADE RAPID PROGRESS, TOGETHER WITH
 SCHOOLS OF BROOKLINE.*

<i>Cities</i>	<i>Percentages</i>	<i>Cities</i>	<i>Percentages</i>
1. Amsterdam.....	30	16. Watertown.....	10
* Denver.....	20	* Cleveland.....	9
2. Indianapolis.....	19	17. Schenectady.....	9
3. New Rochelle.....	19	18. Montclair.....	8
4. Bayonne.....	18	* Brookline.....	8
5. Milwaukee.....	17	19. Danville.....	7
6. East St. Louis.....	15	20. Kenosha.....	7
7. Rockford.....	15	21. Syracuse.....	7
8. Muskegon.....	14	22. Trenton.....	7
9. Passaic.....	14	23. Niagara Falls.....	6
10. New Orleans (White) . . .	13	24. Plainfield.....	6
11. Perth Amboy.....	13	25. Reading.....	6
12. Danbury.....	12	* Altoona.....	5
* Des Moines.....	12	26. Quincy.....	4
13. Elizabeth.....	12	27. Hazelton.....	3
14. Topeka.....	11	28. Racine.....	3
15. Elmira.....	10	29. Canton.....	2

*See note under Table 8.

TABLE NO. 12.

CITIES ARRANGED IN ORDER OF THEIR RANK ACCORDING TO
PERCENTAGES OF PUPILS IN ELEMENTARY SCHOOLS WHO
HAVE MADE SLOW PROGRESS, TOGETHER WITH THE
SCHOOLS OF BROOKLINE*

<i>Cities</i>	<i>Percentages</i>	<i>Cities</i>	<i>Percentages</i>
1. Amsterdam.	21	15. Danville.	38
2. Milwaukee.	22	16. Passaic.	38
* Brookline.	23	17. Plainfield.	38
3. Indianapolis.	27	18. Schenectady.	39
4. Racine.	28	19. Syracuse.	39
5. Rockford.	29	20. Elizabeth.	40
6. New Rochelle.	30	21. Watertown.	41
7. Danbury.	31	22. Canton.	43
8. Muskegon.	31	23. Hazelton.	44
9. Topeka.	31	24. Quincy.	44
* Cleveland.	32	25. Trenton.	44
* Denver.	33	26. Montclair.	45
10. Niagara Falls.	34	27. Kenosha.	47
11. Bayonne.	35	* Des Moines.	47
12. New Orleans (White)	38	28. Reading.	47
13. East St. Louis.	37	* Altoona.	48
14. Elmira.	37	29. Perth Amboy.	49

*See note under Table 8.

It is seen in the preceding tables that while but two of the 34 cities with which comparison can be made have a better record than Brookline for per cent of slow progress, nevertheless 18 cities have a larger percentage of pupils who make rapid advancement. While this record of a small percentage for slow progress is commendable yet it would seem that the Brookline schools not only require their pupils to pursue a Course of Study one year longer than that which is generally in force throughout the country, but that they also permit a smaller number of them to make more rapid advancement than schools in other cities. Since it is probably true that there is a larger proportion of bright children in Brookline and children who have superior home advantages than in other cities this situation is even more unfavorable than the figures taken above indicate.

This small percentage of those making slow progress on the one hand, and the large percentage of over-age children on the other, is to be accounted for by (1) the large percentage entering late (33 per cent), (2) the large percentage losing time by absences of one-half year or over (14 per cent), and (3) the strongly intrenched habit of advancing pupils regularly one year at a time irrespective of age or ability. No other city equals Brookline in the percentage of regular progress. While not to be strongly commended in any school where selection of pupils of peculiar homogeneous traits and needs is not made or where wide variation in the Course of Study for individual pupils does not occur, uniform and regular progress is not a good thing in schools in which there is such variety of entrance ages and where the course is longer than the usual one, as is true in Brookline. As conditions are now in Brookline a healthy, normal boy or girl who enters the Brookline schools at five and continues regular in attendance has about one chance in 20 of making up a year.

The relative standing of the various elementary school groups affords an interesting and profitable study. The schools are arranged in the order of their rank in each of the respects studied in the following table.

TABLE NO. 13.

RELATIVE POSITION OF VARIOUS GROUPS OF BUILDINGS AS
REGARDS UNDER AGE, OVER AGE, RAPID PROGRESS, AND
SLOW PROGRESS OF PUPILS.

<i>Under Age</i>			<i>Over Age</i>		
<i>Rank</i>	<i>Schools</i>	<i>Per Cent</i>	<i>Rank</i>	<i>Schools</i>	<i>Per Cent</i>
1	Devotion.....	8.5	1	Devotion.....	50.5
2	Lawrence, Cabot and Longwood.....	5.5	2	Pierce.....	53.5
3	Runkle and Driscoll....	5.5	3	Runkle and Driscoll....	55.0
4	Pierce.....	4.0	4	Lincoln, Parsons and Sewall.....	57.0
5	Lincoln, Parsons and Sewall.....	2.0	5	Lawrence, Cabot and Longwood.....	57.0
6	Heath and Newton....	1.0	6	Heath and Newton....	66.0

<i>Rapid Progress</i>			<i>Slow Progress</i>		
<i>Rank</i>	<i>Schools</i>	<i>Per Cent</i>	<i>Rank</i>	<i>Schools</i>	<i>Per Cent</i>
1	Runkle and Driscoll....	15.0	1	Runkle and Driscoll....	10.0
2	Devotion.....	14.0	2	Devotion.....	18.0
3	Lawrence, Cabot and Longwood.....	8.0	3	Lawrence, Cabot and Longwood.....	20.0
4	Pierce.....	4.0	4	Lincoln, Parsons and Sewall.....	25.0
5	Heath and Newton....	3.0	5	Pierce.....	29.0
6	Lincoln, Parsons and Sewall.....	2.0	6	Heath and Newton....	39.0

The sum of the ranks is as follows: Devotion, 6; Runkle and Driscoll, 8; Lawrence, Cabot and Longwood, 13; Pierce, 15; Lincoln, Parsons and Sewall, 19; Heath and Newton, 23.

The unusually high record made by the three highest schools as regards slow progress is commended. There is not a single city in the group studied that equals the Runkle and Driscoll, the Devotion, and the Lawrence, Cabot and Longwood groups in their low percentages of people making slow progress. On the other hand, the wide disparity between schools is strikingly apparent in these tables. Why should one school group have one-fourth as many under-age and four times as many slow-progress pupils as another, or 15 times more children making rapid progress? The Survey Committee believes that it should be possible to bring up the lower standing schools more nearly to schools which excel, both as regards rapid progress and slow progress.

The reasons for this condition of affairs, in addition to what has been said above, are to be found in the following:

(1) The short school day. Pupils are not so long under the care of teachers and so there is not so much time to give to the attention of individual pupils, but this is offset, in part at least, by the small size of classes.

(2) The organization of pupils into classes. Classes are not organized according to the ability of pupils. The exceptionally capable and the mentally deficient are in the same class with average pupils, except that in the Lincoln School there is one class which is in part of backward pupils.

(3) Individual instruction upon the part of the regular teachers and additional assistance by an unassigned or coaching

teacher has not been developed to full efficiency. While there are four such teachers, much of their time is devoted to other duties.

ELIMINATION OF PUPILS FROM SCHOOL.

The Brookline schools hold the children in school to a later age than do most schools. Their success in this respect is apparent from the tables given on previous pages showing enrollment in the various grades and the percentages of under-age, normal-age and over-age pupils, Tables Nos. 3 and 7. The distribution of the total enrollment by ages given below makes it even more clear.

TABLE NO. 14.

DISTRIBUTION OF PUPILS BY AGE.

<i>Ages</i>	<i>Number</i>	<i>Per Cent of Total</i>
5	230	6.2
6	326	8.8
7	307	8.3
8	309	8.3
9	328	8.9
10	333	9.0
11	345	9.3
12	328	8.9
13	303	8.2
14	235	6.3
15	242	6.5
16	183	4.9
17	152	4.1
18	81	2.2
19	22	.....
20	6	.....
21	1	.....
Totals	3731	100.0

TABLE NO. 15.

The estimated percentages of those entering who are retained to each age are given together with the same figures for Cleveland and Salt Lake.

<i>Continuing to Age</i>	<i>Per Cent BROOKLINE</i>	<i>Per Cent Cleveland</i>	<i>Per Cent Salt Lake</i>
13	93	97	93
14	72	83	84
15	74	53	67
16	56	33	36
17	47	21	26
18	25	12	17
19	7	4	7
20	2	1	1
21	..	..	..

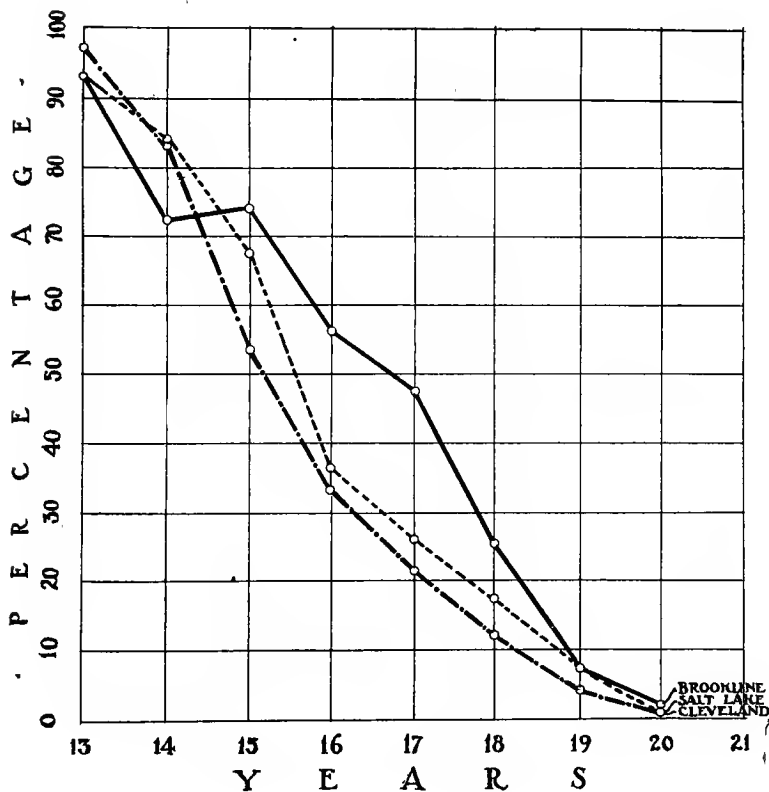
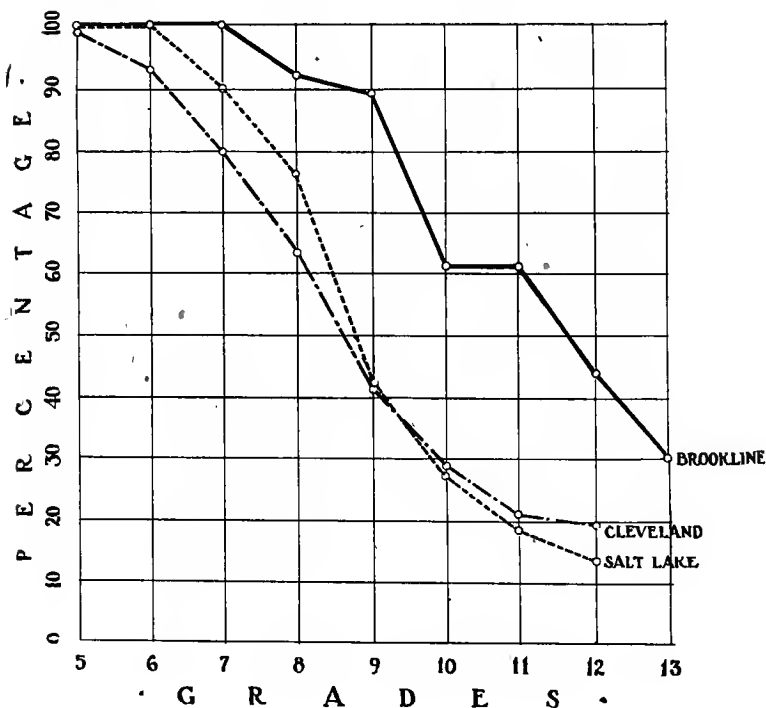


TABLE NO. 16.

Not taking into account repeaters or those coming in from outside of Boston, and not including the School of Practical Arts, it is estimated that of the total number entering school the following percentage of pupils reach the grades indicated. Similar figures are given for Cleveland and Salt Lake.

Grade	BROOKLINE	Cleveland	Salt Lake
V	100	99	100
VI	100	93	100
VII	100	80	80
VIII	92	63	76
IX	89	41	42
X	61	29	27
XI	61	21	18
XII	44	19	13
XIII	30	19	...



More pupils left the elementary public schools between June, 1915, and June, 1916, to go to private schools than to go to work. The distribution by buildings and by grades is shown in the following tables:

TABLE NO. 17.

LEFT FOR PRIVATE SCHOOLS, 1915-16.

Age	1st Grade	2d Grade	3d Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	9th Grade	Total
5	1	.					..	..		1
6	1				.	.	..	..		1
7	.		1		.		..	..		1
8	.	1	1	2			..	..	.	4
9	.	.		2	.	.	..	..		2
10	.	1		.			..	..		1
11	.		1	1	1	.	..	..		3
12	.	.			1	3	2	..		6
13	.			.		3	1	..		4
14				.			..	2	4	6
15							2	1	2	5
16		.	.	.	.		..	..	.	..
17		.					..	..		..
Total	2	2	3	5	2	6	5	3	6	34

TABLE NO. 18.
LEFT FOR WORK, 1915-16.

Age	1st Grade	2d Grade	3d Grade	4th Grade	5th Grade	6th Grade	7th Grade	8th Grade	9th Grade	Total
5	.	.					..	..		..
6	.						..	..		..
7							..	..		..
8							..	..		..
9							..	..	.	..
10							..	..		..
11							..	..	.	..
12							..	..		..
13							..	..	.	..
14							1	2		3
15	.			1	1		10	5		17
16						1	1	4	2	8
17	.	.					..	..	1	1
18							..	..		..
Total	.	.	.	1	1	1	12	11	3	29

The fact that all pupils but one, who left for work, were from the Heath, Lincoln and Pierce Schools, and that those who left for private schools were largely from the Driscoll and Runkle buildings, and that but one left for either purpose from the Devotion building reveals significant difference between these schools.

It is gratifying to note that but three pupils left to work at 14, while but three left to go to work lower than the seventh grade.

This is a very commendable showing. Notwithstanding the pupils are over age, they remain in school until later in life and in so doing reach higher grades than pupils in most cities. This is due in part to the parents, who desire their children to obtain a good education, but in just as large or greater measure to the schools. In the first place, the superior personalities of the principals and teachers have enabled them to hold the children in school with a Course of Study undifferentiated to meet their needs and an extra year in length. This is one of the strongest features of the Brookline elementary schools. There are few, if any, public school systems in which the teaching corps are superior to that of Brookline in personality, sympathy, interest and love for their pupils and with the power to win and hold them.

The elimination from the Brookline High Schools and the reasons assigned during the same period are shown in the following tables:

NUMBER LEAVING BROOKLINE HIGH SCHOOL IN 1915-16.

<i>Year</i>	<i>13</i>	<i>14</i>	<i>15</i>	<i>16</i>	<i>17</i>	<i>18</i>	<i>19</i>	<i>20</i>	<i>21</i>	<i>22</i>	<i>Total</i>
1st	1	5	13	12	11	2	..	..	..	1	45
2nd	..	..	1	9	6	4	..	1	..	..	21
3rd	..	..	1	4	9	6	5	1	..	..	26
4th	..	..	..	..	2	2	3	1	..	..	8
Total	1	5	15	25	28	14	8	3	..	1	100

REASONS FOR LEAVING BROOKLINE HIGH SCHOOL.

Year	Work	Moved out of town	Health	Couldn't Pay	Didn't like it	Couldn't graduate	No reason given	Totals
1	28	8	5	1	1		2	45
2	10	5	..	1	1		4	21
3	10	7	3	1			5	26
4	..	1	2			2	3	8
Total	48	21	10	3	2	2	14	100

Eighty-six per cent of them were over age and had they earlier in their course been brought up to normal age, over one-half of them would have been in their final year. It seems unfortunate that while Brookline succeeds in holding a good percentage of her pupils to late ages—late enough for high school graduation from a 13-year course—she does not succeed in having them complete that course. That is the crux of the deficiency; Brookline holds her children in school, but she is too content to allow over-age pupils to go along making only normal progress. The omission of the ninth grade and the organization of a Junior High School would help in this respect but would not remedy the situation in the lower grades. In order to reach the desired efficiency in all departments of the school, it is necessary that continuous study be made of the age, abilities, needs and progress of each child and that he be allowed to pass upward through all the grades from the kindergarten and through the high school at that rate which is best for him. At present, supervision of this phase of the school seems to be deficient. The Survey Committee would recommend the introduction of age-progress studies, the assignment of supervision of the progress of children to one supervisory officer, as an assistant superintendent, and the passing of the requirement that annual report upon this

subject be made to the School Committee and be published for the information of the town.

THE ATTENDANCE OFFICE.

The attendance office in Brookline is managed by one man who gives possibly two-thirds of his time to it. He has no part in the taking of the census. His functions are to see that all children of school age, except those that are exempt from attendance on legal grounds, are enrolled in some school, that they attend regularly in accordance with the law, and that those who do not comply with the law are prosecuted; to issue educational and working certificates and to keep in touch with those at work and with the conditions under which they work through the means that these certificates furnish and, in general, to see that the State requirements relating to attendance and employment of children, in so far as the school is involved, are carried out.

Taking into account the limitations under which the attendance work is performed, it is well done. The School Committee may, however, in the opinion of the Survey Committee, promote the efficiency of the service in a number of ways. In the first place, the attendance officer should be allowed to give his entire time to this work and to that of assistance in the enforcement of laws and regulations pertaining to contagious diseases. He has not been able to check up the enrollment of those on the census books in a thoroughgoing fashion, although he has given attention in this respect to that portion of the town surrounding the Village, where it seems the more serious violations of the law are most apt to occur. The new forms of record required by the State are well adapted to the purposes for which they are intended, but their maintenance will require considerable time. The duties connected with the stock room and the delivery of supplies to schools, etc., now required of the attendance officer should be transferred to the clerk having charge of school property.

In the second place, the taking of the census should be performed by the attendance officer with the assistance of the principals and teachers. If the census is taken by some one outside

the school, there is a certain amount of knowledge of conditions which the school needs and does not get. The irregular increases in the number in the census lists from year to year, as compared with the regular increases in enrollment, suggest that some children of school age have been missed.

The census taken by the school authorities should be a continuing census, and the individual record file should always be kept up to date. The State census in April of each year may then be taken from the card file. Principals, with the assistance of teachers and pupils, should be expected to keep in close touch with the coming into their districts and with the removal from them of children of school age. At least one of the principals does this now, and the Survey Committee believes that it is a factor in the superior record made by the pupils of this school in progress, small number of withdrawals, and attendance. Any change should be at once reported to the central office on a form provided for that purpose. The attendance officer should give attention to this phase of the work, also, supplementing the work of the principals, teachers and pupils.

At least once during the year the continuing census should be checked for omissions and inaccuracies by a house-to-house canvass, not necessarily, however, by house-to-house visitation. By a detailed mapping of the various parts of the town, as is done in the assessors' office, and by the use of floor plans of apartment houses, principals and teachers, with their present acquaintance with the families, can, by utilizing the knowledge of the older and more reliable pupils, make an accurate census with relatively little visitation. It would be a distinct gain to the schools, however, if such visits were made even when not absolutely necessary.

The attendance office may be so developed that it will render considerable assistance to the school in the vocational guidance of its former pupils and in the educational guidance of children within the school. The obligation of the school does not cease when the pupil leaves school. It should seek to render him such help as is within its power in finding out the kind of a position to which he is well adapted, and to see that conditions are favorable to him in his work. The attendance office may thus be made

an agency for obtaining much valuable information, and the knowledge gained should be put in available form for the consideration of the other school authorities. The School Committee may well foster such co-operation.

RECORDS AND REPORTS.

There is a striking lack of records and reports in the public school system of Brookline, and a large proportion of those that exist have been introduced upon the initiative of some principal or copied from another principal, and are not necessarily or, in fact, in general use throughout the system as a whole. The attendance register required by the State of Massachusetts, the monthly report relating to attendance, and the annual report on promotions and health record cards constitute practically all the regular official forms of records and reports pertaining to pupils. There are no forms for keeping account of pupils' monthly, or even annual, ratings in their studies. In the grades individual teachers keep such records as they choose and in such form as they please, but they are not preserved beyond the end of the year. The report on promotion, a copy of which is retained in the principal's office, is the only official permanent pupil record. The so-called "blue card" has also been used in several buildings by principals. It is a fairly good form of cumulative individual record of the pupil's progress. There is no general form of monthly or quarterly report to parents, but a few of the principals have devised reports of their own. These tell in a general way of the pupil's work.

By no means enough information about the high school and the pupils is being recorded, systematically accumulated, and periodically analyzed and reported in statistical form. The statistical information about the high school presented annually in the report of the School Committee is of very limited scope. The fact of meager records is also illustrated by the incident that an age-grade table of the high school pupils was made up for the first time at the request of a member of the Survey Committee.

The financial accounting, while accurate, is crude, inadequate, and of practically no value in determining efficiencies of costs.

Much of the small amount of time given to it in the Superintendent's office is wasted. All bills for supplies are copied in detail when the requirement of a duplicate bill would serve every purpose, but a proper system of accounting would obviate the need of it, since there is always the original bill in the city accountant's office. Similar waste appears in duplicating month after month opposite each teacher's name the amount of salary paid. These books should be dispensed with and the labor spent upon them turned to more useful account.

The budget system also needs revision. It is accurate and reliable, and affords a means of knowing from month to month through the monthly reports from the town accountant the exact status of the finances, but it needs to be reorganized in order to make it an efficient instrument for intelligent control.

Records in the field of equipment and supplies are as indefinite as in the fields mentioned above. The "stock room" in the Superintendent's office has an accounting system which, though simple, is accurate, when fully carried out. But there is no accounting between principals and the Superintendent's office for the supplies and textbooks given them, although the principals send in annually a statement of stock on hand. A few of the principals have more or less satisfactory accounting schemes between themselves and individual teachers, but again wholly upon their own initiative and with continuance dependent solely upon their own pleasure.

School administration, in common with business and industrial administration, has passed beyond the point of unsystematic management based upon mere opinion. Records and reports are an essential part of efficient management. In the installation of a system of records and reports their relative value in the determination of efficiencies should be a fundamental consideration, and no data should be required which are not utilized in efficiency studies, the benefits of which are brought to pupils, teachers, principals, supervisors, Superintendent, the School Committee or the people. Many of the forms should be uniform, and be used throughout the system. The comparison of the facts revealed in different buildings and classrooms should furnish the basis of discussion in principals' and teachers' meetings and in the development of

plans and standards. The forms should be so arranged as to require a minimum of time in filling out, and the results of the study should always be immediately available to any person in the schools who may have occasion to use them.

The number of records, the kinds and their exact forms can best be determined by a permanent expert upon the ground, for, while there are certain definite principles and rules governing forms of records, the best records are those adapted to local conditions. There are, however, certain forms pertaining to pupils which have come into general use among cities with the purpose in mind that the records may go with the pupil from city to city and fit in as component parts of each record system.

The following, at least, are needed:

1. Pupil records: (a) Permanent record of quality of work done in each subject or activity. (b) Progress of pupils through the grades. (c) Failure in each study. (d) Withdrawal from school. (e) Location of each child of school age in school, public or private.

2. Finances: (a) The accounting system should be re-organized so as to permit a distribution of expenses in accordance with the classification of the national Office of Education and the National Education Association, which is followed in most cities. The books should be kept in the office of the Superintendent of Schools by a competent clerk, or if kept elsewhere the city Superintendent's office should be able to control absolutely the classification of the items when entered upon the books. Ledger accounts should be kept for each school and each activity. The detailed items may, however, be kept in lead pencil memorandum form and destroyed after the totals for each month have been balanced and record made of them in ink. This expedient has been found practicable in a number of cities and saves not only a great deal of time, but also avoids the accumulation of a large number of old account books.

- (b) The budget and the monthly and annual financial reports should be revised so as to be in accord with the national system of school accounting. This would require a distribution of items first among each type of school as elementary, secondary, etc.,

divided into such subheads as desired, and second (appearing as heads of columns to the right of the column for schools) among the general classification of expense as general control, instruction, operation of plant, maintenance of plant, etc. In the preparation of the budget estimates should be made in detail and based upon the costs of the year closing, and showing the reasons for any change, in accordance with the best practice in city governments.

CHAPTER VI.

PROVISIONS FOR SAFEGUARDING HEALTH.

The schools of the United States have been slow to adjust their curriculum of studies to the changed needs of the pupils and the community. Pupils do not now, as formerly, go to school three months in the winter to learn to read, write and cipher, securing their vocational skill and bodily power during the other nine months. They go to school nine months and are idle the other three months because the opportunities for securing vocational skill and bodily endurance have been taken away from them with the removal of industry from the home. The school must accept the new conditions of this industrial age and provide adequate opportunity for bodily exercise related to vocational skill and for the fundamental bodily exercises which are related to health.

The health needs of school pupils may be stated as follows:

1. A healthful environment in home, school and community.
2. A careful health examination which would include medical inspection, a mental examination, a physical examination.
3. Instruction in personal health laws and regulations.
4. Equipment.
5. Regulated physical activity.

I. ENVIRONMENT FOR ACTIVITY.

Elementary Schools.

In this Survey the elementary schools studied were the Edward Devotion, the Heath, the Lawrence, the Lincoln, the Pierce and the Runkle.

Edward Devotion School. The playground of this school was found to be adequate for play purposes. The gymnasium is 36 feet by 72 feet with a moderate equipment consisting of a horse, a buck, stall bars, vaulting box and boom. Six baths and 12

dressing rooms are supplied for the boys and an equal number for the girls. So far as the writer could learn, these baths had been installed for three years, but had never been used as a regular part of the physical training program.

Heath School. A splendid play field of approximately seven acres adjoining the school is available for play purposes. In the school building the thermostats had not been working for two weeks. This error in environment could easily have been avoided. The gymnasium has a comparatively low ceiling, about 14 feet to 18 feet, with an air duct under the middle of the ceiling. This reduces the height to such an extent as to interfere with many types of valuable exercise, particularly in the line of games. Nine baths for boys and nine for girls with 12 dressing rooms were in use, with an attendant to look after them. These baths were used by eighth and ninth-grade pupils after gymnasium work. Twenty-five minutes after class was allowed for bathing, which is ample time. The soap and towels were furnished free.

Lawrence School. At this school the adjacent park available for playground purposes is ample. The gymnasium is very small, about 27 feet by 38 feet, with a low ceiling not over eight feet in height, supported by a number of posts. The gymnasium had been made in the space formerly devoted to coal bins. This effort to provide appropriate physical training shows commendable enterprise, but it falls far short of actual needs.

The room was clean, but entirely inadequate in size, in height of ceiling and in ventilation. There is urgent need for a better gymnasium if this school is to be continued in use as a grammar school.

Lincoln School. The Lincoln School has no adequate play field. Some use is made of the Boylston Primary School field across the street. The gymnasium is too small. This large school is greatly in need of better facilities for physical training than it now has.

Pierce School. This school has no suitable playground. The children are literally compelled to break the law if they desire to play ball around the school building. On the small playground the writer saw a trespass sign which admonished the children not to

play on the school grounds after school hours. The ground opposite the Pierce School might serve admirably for playground purposes if the Bethany Church building and a number of old houses, some of them vacant, were removed.

The gymnasium consists of a room 27 feet by 57 feet with two large pillars which really convert it into two small rooms. The ventilation was found to be bad. The janitor stated that he did not ordinarily use the fans. Upon examination it was found that the air was pumped from the street level, where much dust and dirt accumulate, and was forced over the top of the boiler, where any gas that might escape from the fire box would come up into the air duct entering the schoolroom after passing over the top of the boilers and their covering of soot and dust. This condition should be remedied by a separation of the bottom of the duct from the top of the boiler space and by protecting the air supply from outside contamination.

Runkle School. This school has the use of the Beacon play field, which is ample in size, but so far from the building that the children cannot use it for out-of-door exercise during the school periods.

The gymnasium is 32 feet by 72 feet, with a height of about 11 feet, which is too low for many types of exercise. The minimum gymnasium height should be 18 feet. The window space is inadequate. There are six small basement windows, roughly, two by two feet, and five of medium size, about two by five feet. There are four posts in the gymnasium which interfere with its effective use. The gymnasium is equipped with stall bars, ropes, boom and vaulting box. It has no bathing equipment. The floor is of rough concrete, difficult to keep free from dust.

Junior High School.

The building of a Junior High School with adequate equipment for the upper grammar grades would make possible the use of the present equipment in the best schools for a period of years for the elementary grades. The pupils in upper grammar grades urgently need an all-round equipment of play fields, gymnasiums and baths which will furnish an adequate environment for activity.

This should be a fundamental consideration in planning the new building, should the Junior High School plan be adopted. It is obvious that under this plan adequate facilities could be provided at a moderate per capita cost and the instruction could be of the very best without being unduly expensive. Then, too, greater enthusiasm for physical exercise can be developed where boys and girls can be handled in fairly large groups.

High School.

Girls. The girls have no playground. The common, which is used as a playground, seems to be entirely monopolized by the boys. A play field for the girls might be arranged back of the high school gymnasium if properly screened by hedges. Girls have as urgent need for play space as have boys.

The high school classes use the Brookline Public Gymnasium. Apparently no arrangement is made to use the baths. The larger proportion of the boys and girls are said to use the swimming pool outside of school hours. The gymnasium for girls is 35 feet by 75 feet. At the date of this study it was in use on Monday, Wednesday and Friday from 8.30 to 1.30. It might have been used on Tuesday and Thursday from 8.30 to 10.00 and from 12.00 to 1.30. The equipment is limited. It consists of 27 stall bars, one ladder, nine ropes, eight traveling rings, six rope ladders, two sets of flying rings, one horse, one vaulting box and mats sufficient for this apparatus. There was also an equipment of Indian clubs and dumb-bells.

The girls' gymnasium is three flights from the street. In connection with this gymnasium a rest room is urgently needed. The showers are very badly arranged, a portion of them being on each of three floors. There are 10 of these showers distributed in five different shower rooms. Some 200 lockers are also scattered on the second and third floors in five different rooms. Adequate supervision of bathing and dressing is practically impossible under such conditions without great expense. The baths are scarcely used at all by the girls. The attendant stated that not more than 12 girls per day use the baths. In order to use them at all it was necessary for the teacher to excuse the girls from a

portion of the gymnasium class, as the time was not sufficient for both suitable exercise and bathing.

Boys. The play field on the common is adequate for the present activities of the boys, considering the present size of the school. Additional vacant land should be secured back of the school building for use both by boys and girls.

The gymnasium used by the boys is a large, well-equipped room, 71 feet by 101 feet. It is thoroughly equipped with light and heavy apparatus. The bathing equipment available for the boys is poor and is located in a cold room. The heat in the locker room was also insufficient. The shower room contains four showers and two toilets. The toilets might better be removed to another room and eight or 10 additional showers installed in the present shower room, unless arrangements can be made to use the locker room and baths which are reserved for municipal work. It seems extravagant to have a large locker room and well-equipped baths left unused during the school day. The municipal locker room is well equipped with lockers, dressing rooms and showers. At the time of this study the gymnasium was in use from 8.30 to 1.30 on Monday, Wednesday and Friday, and from 12.45 to 1.30 on Thursday. It might have been used from 8.30 to 10.00 on Tuesday and Thursday and from 12.45 to 1.30 on Tuesday. These hours were not utilized, apparently, because of inability to put them into the schedule of the school.

The impression made upon the examiner was that an administrative failure had been made to use adequately for high school boys and girls the locker room, shower baths and swimming pool advantages in the municipal plant. In the changes that were in progress, consisting of the addition of public showers and improvements in the swimming pool, no arrangement was apparently made for the use of this equipment during the school day by school pupils. A basketball cage of 24 feet by 75 feet was apparently little used. With some rearrangements the equipment might be used very much more largely during the school day.

The minimum equipment for baths based on 50 pupils in a class should be:

(a) Boys. Where, for moral and hygienic reasons, an open room is used, one shower is needed for each five boys if individual control is used, and one for seven boys if multiple control is used. Multiple control is recommended because it saves time, water and space. The space for each shower should be 24 square feet. This gives adequate room for drying in the shower room.

(b) Girls. Closed shower baths for girls should be 3 feet 3 inches by 3 feet, and have one shower for each three girls if individual control is used, or one shower for each five girls if multiple control is used. Multiple control is recommended, where one attendant regulates all the showers.

Dressing Rooms.

Boys and girls should be supplied either with individual lockers 12 inches by 12 feet by 36 inches, which with the aisle space would require eight square feet per pupil, or with box lockers 6 inches by 12 inches by 36 inches for the storage of gymnasium clothing. These require two and one-half square feet per pupil for the locker and the aisle. Under these conditions enough of the larger lockers should be supplied for two classes. In the girls' dressing room booths sufficient for two groups of girls, one dressing and the other undressing, should be supplied. These need to be 2 feet 10 inches by 4 feet.

Administration.

The class room schedule should be arranged to permit each child in the high school and grammar grades or Junior High School to have in addition to the recess at least 40 minutes of vigorous exercise twice each week, with 20 additional minutes allowed for bathing. The schedule for the lower grades should arrange for the recess period, for two 30-minute periods of gymnastics or play per week and for three daily periods of exercise of four minutes each. The present class schedule prevents the use of the plant in ways which are largely related to organic vigor.

II. MEDICAL AND PHYSICAL EXAMINATION.

Elementary Schools.

There is urgent need of better correlation of the medical and physical examinations in the elementary schools. Much good work is wasted because of poor methods in recording results. At the date of this study it was not possible to follow the health record of an individual child from grade to grade, nor was it possible for the Physical Training teachers without adequate health records to do their best work on individual children. In a number of the schools records were kept in books instead of on cards and, therefore, the child's record could not readily be transferred from room to room or from school to school. The value of health records consists chiefly in the help they may give to the regular teacher or to the teacher of Physical Training. In the Pierce School the principal had some very interesting private records by means of which she was following up the children in an effective way. Height and weight, however, were not recorded, as they should have been both in the spring and fall. In some schools the height and weight are taken once per year. The writer found no available annual report of either medical inspection or physical examination of children. Apparently no records were kept except of cases serious enough to report to the physician. This means, of course, that no permanent record was kept which in the case of a given child would show improvement or decrease of health.

Properly arranged health records should be available for the use of the teachers of Physical Training and the room teachers as well. Children with defects bad enough to need the immediate attention of the family physician were apparently looked after carefully.

High Schools.

In the high schools better records were available than in the elementary schools. Dr. Bond was evidently giving the girls a careful examination. It is unfortunate that enough of her time could not be secured for more rapid examination of the

pupils. The records show that no Physical Training exercise was taken before December 6. The time given by the examiner averaged about two hours per day on only 25 out of the 50 available days. This means that equipment which should have been fully used was largely unused until December 6, and that the teachers of Physical Training gave no regular instruction during this time. Arrangements should be made to complete the examinations more rapidly and to start the girls earlier in healthful activities. It is true, of course, this year that the school opened later than usual owing to the epidemic of infantile paralysis. It is, nevertheless, true that this year there was an unfortunate waste of good equipment through lack of use and an equally costly expenditure for teachers who could not teach because of poor administration of the medical examinations. The essential needs in medical and physical examination of the pupils are, first, the keeping of careful records; second, the making of those records available for use by the regular and Physical Training teachers in whose classes these pupils are working. These essential needs have not been adequately met. The health records for the entire city need careful revision.

III. INSTRUCTION.

Elementary Schools.

The health activities provided both in the elementary and high schools are entirely inadequate for the health needs of the pupils. In the elementary schools the pupils have 75 minutes per week for exercise, a portion of this, depending upon the equipment, in the gymnasium, the rest in the classroom. Exercises to correct bad postures due to the school desks and the sedentary habits of the children are of great importance and the teachers were found to be giving excellent corrective exercises. The time in the schedule devoted to health activities, however, was entirely too small to do much more than this. But the children need to develop organic vigor as well as good posture. The time allowed was not adequate for securing these results. Except in some of the classes in the Heath School the need of the bath for tonic purposes following exercise is not yet clearly recognized in arranging the Brookline class schedules.

Miss Barnes, the director of Physical Education, and the other teachers should be commended for the excellent work which has been done under poor administrative conditions. The work accomplished in corrective gymnastics deserves special praise. This section of the work should be increased for children in the elementary schools.

The High School.

The high school schedule offers for the girls 20 minutes of exercise twice per week without opportunity for a bath. They should have adequate time for vigorous exercise followed by a bath. This would mean as a minimum not less than an hour two times per week, one hour and 20 minutes would be better still. The question often arises whether it is possible to provide adequate time in the schedule. The question should rather be raised whether the schedule is more important than the pupils' health and whether the present school day is not too short.

The boys have two periods per week for Physical Training without the opportunity of bathing. Opportunity should be given for at least two periods per week, of an hour each, for exercise and bathing.

IV. SUPERVISION.

The work assigned to the Examiner did not include a survey of the work of the public gymnasium and baths. A general study of the administrative problems in health activities of the town as a whole should be made. The general impression made upon the examiner was that a lack of correlation must necessarily exist under present conditions. He found that the town was paying \$7675 for instruction in the municipal gymnasium and bath; \$2800 to the director, Mr. Samuel K. Mason; \$1400 to Mr. C. P. Cameron; \$1100 to Miss Mary V. McGrath; \$1650 to Mr. R. J. McCormick and \$725 to Miss Clapp. This does not include the salaries for supervision of \$1800 for Mr. Rich; \$1100 for Mr. Murphy and \$900 for Mr. Allen. A similar examination showed the salaries of the Physical Training teachers as follows: Miss Bessie L. Barnes, \$2300; Miss Toby (three days), \$750; Miss

Herrn, \$800; Mr. Delehanty, \$1650; total, \$5500. The total instruction cost for the town is \$13,175.

The latest report of the municipal gymnasium shows a total attendance at the gymnasium classes of 30,505. The attendance of the high school and Practical Arts pupils at this gymnasium would total for the year approximately 50,000, with all pupils attending twice per week as per schedule (see also Municipal Gymnasium Report for 1915, where the estimate is 49,000). A total of 11,634 boys and girls were in attendance at the 12 municipal classes arranged for them, as compared with a total attendance of 50,000 in the 32 high school and Practical Arts classes. The latest school report gives 4470 pupils enrolled in the Brookline schools. The expenditure of \$5500 for instruction in physical education allows for an expenditure of \$1.23 per school pupil per year. The school report states that there are 188 sessions. The present cost per day per pupil for instruction in health activities is, therefore, less than one cent.

The latest Municipal Gymnasium Report shows a net expenditure of \$19,146.73, with a total of baths for the year of 82,870 and a total gymnasium attendance of 30,505 or a total unit use of the natatorium and gymnasium of 113,375. The unit cost under these conditions would be approximately 17 cents per bath or per gymnasium attendance. It appears that the money expended for the adults is proportionately larger than for children, though the needs of the children are greater than for the adults. This information is based upon a careful study of the reports of both the School Committee, and the Gymnasium and Baths Committee. The recommendations given below call for an increase of a little more than twice the present instruction in physical education. This would increase the cost to somewhere between \$1.50 and \$2 per school pupil per year, or a little more than two cents per day per pupil. This seems a relatively small expenditure as compared with the cost of the baths and gymnasium for the adults.

HEALTH WORK IN THE BROOKLINE SCHOOLS.

How the Work Started.

Medical inspection in Brookline is very nearly a quarter of a century old. Twenty-three years ago, under the direction of the Board of Health, physicians were appointed for the purpose of inspecting all children in the public schools in order to detect cases of contagious diseases, and by ordering their immediate removal prevent the growth and spread of epidemics. From the very first the value of this inspection was amply demonstrated. The annual number of cases of measles, whooping cough, scarlet fever, and the like, notably diminished and school attendance records showed corresponding improvement.

In 1906 a State law was passed requiring medical inspection work to be carried on by school authorities rather than by the Board of Health. In accordance with this law the work already established was taken over by the Brookline School Committee. Dr. H. Lincoln Chase, agent of the Board of Health, was appointed chief medical inspector and most of the physicians formerly employed in that work were retained in the services of the School Committee. Of the 11 medical inspectors now in service six had the privilege of co-operating with Dr. Chase in establishing medical inspection of schools under the direction of the school authorities. These pioneers are Doctors Hastings, Williams, Blanchard, C. S. Francis, Cutts, and Kittredge.

In the first year under the working of the new law inspectors had as their main task the detection of contagious diseases. In addition, specialists were employed to examine the eyes, teeth, ears, nose, and throat of each child in the Pierce School. For the following six years this plan of employing physicians for general inspection and specialists for different parts of the physical examination was followed; but in June, 1912, the School Board voted to do away with the services of specialists in teeth, ears, nose, and throat and to assign their duties to the regular medical inspectors on the staff. In 1913 Dr. Chase resigned and Dr. Hastings was appointed in his place. During the years from 1907 through 1913 each annual report of the School Committee

carried with it a very careful and detailed report of the physical examinations made under the direction of the Medical Inspection Department. Since 1913 these annual health reports have been omitted.

Such is the basis upon which the present system of medical inspection stands, and in the light of which it must be studied. Apparently, if one can judge from a careful reading of the early reports, medical inspection in Brookline was once a live and active institution. Keen and vigorous interest was felt by members of the medical inspection staff. Careful examinations were made by specialists in their various fields. Records obtained with one group of children were compared with those obtained during previous years or with other groups of children. Physical records were compared with records of school standing. Attention was given to the effect of poor eyesight, defective hearing, or adenoids upon backwardness in school subjects. Public lectures were held for the purpose of explaining to parents and teachers the importance of the various physical defects noted and the means of remedying them. A fresh air class was established. School lunches were urged. Attention was paid to the humidity of classrooms. Posture work carried on by the Physical Training Department was encouraged. A system of uniform records was established and directions devised for their use so that all notations should mean the same thing to every doctor. Constant emphasis was laid upon the importance of follow-up work. The services of one school nurse were secured and those of another asked for. All of these things are shown in the printed record of the annual reports. How carefully the work was done one cannot say, but there is ample evidence at least that medical inspection was carried on earnestly and consistently by a corps of united workers under able leadership. Let us now turn to the consideration of conditions as we find them during the present school year.

Legal Provision for Medical Inspection.

According to the State law physicians employed by the School Committee must be ready to examine children who apply

for health certificates; inspect for contagious diseases; examine children who have been absent from school before allowing them to return to their classes; make careful yearly physical examinations; send notices of disabilities to parents or guardians, and keep careful records of the results of physical examinations. Tests of sight and hearing are made according to law by the individual school teacher.

The Staff.

As at present constituted the medical inspection staff for the public schools of Brookline consists of one chief medical inspector, eight men physicians, two women physicians, and one nurse. Seven of the men and one of the women are assigned to work in the public schools; one man acts as inspector for the parochial school, and one woman makes the annual physical examination of high school girls, but is not listed in the school directory as a member of the medical inspection staff. Medical inspection work is carried on under the direction of the School Committee. In addition there is a dental clinic established this year which, according to State law, is carried on by the local Board of Health. It is, however, located in one of the public school buildings and is intended to serve public and parochial school children.

The medical inspection staff shows wide variation in interest and ability. Several of the members are distinctly above the average for positions of this kind and four in particular would more properly be classed as specialists than as general practitioners. Brookline is particularly fortunate in being able to hold them on her public school staff.

The Policy of Laissez Faire.

In studying a system of public school medical inspection the first questions which one asks are, "How well is the staff organized?" "Is there hearty co-operation between its members?" "Does every inspector share with the others a common interest and a common aim?" In the Brookline system at present there is no apparent evidence of such uniformity. Each inspector goes about his work with little or no reference to the work being

carried on by others. The chief medical inspector quite frankly states that he prefers to leave his associates entirely free in the matter of working and planning. Each inspector chooses his own hours for work. He decides which defects he will look for and how he will record them. With the exception of an emergency period, such as this fall when the poliomyelitis epidemic was at its height, there is no uniformity of attack by all of the physicians upon any one defect or disease. One physician makes a specialty of pretubercular cases; another is especially interested in conditions of the heart, and a third pays particular attention to conditions of the feet and back.

The work is characterized by absence of rules and differences in interpretation of such rules as do exist. Physicians very rarely meet together officially to talk over their work; in fact, some of those more recently appointed to the staff were unable to tell who the other members were. Each member of the staff is practically an isolated agent, who apportions his time, plans his work, and keeps his records without reference to any outside source.

An Interview.

The effectiveness of any line of work can often be fairly judged by noting the attitude of those who administer it. Personal interviews with members of the medical inspection staff revealed wide differences in attitude, which must necessarily result in great diversity of service. Here follows a verbatim report of one interview with a Brookline school physician. It is from notes taken at the time, and only those changes made which serve to conceal the identity of the physician quoted.

Notes on Interview with a Brookline Public School Physician.

Regards State requirement of eye and ear tests as "ridiculous procedure" but "teachers do it probably as well as anybody could." Annual physical examination is "no use — gathering an immense amount of statistics which are of no use to anybody."

Thinks doctors should do daily inspection. "Teachers do it as well as anybody else, but aren't trained for it and shouldn't be allowed to."

"Well-to-do children don't need medical inspection."

Doesn't see any good in a school nurse, except when she acts as a messenger to take children to clinics or run other errands. Doesn't think that either nurse or teacher should take the place of doctor. Nurse should never be on her own initiative — should always be under doctor's orders. Is first lieutenant, but never captain. Nurse may be and often is perfectly capable of making inspections and yearly examinations, but shouldn't be allowed to do so, since such work does not belong to her field.

Has no desire for any assistance. Does not want to be relieved of responsibility.

Does not believe in school lunches, but does believe in a charity fund for poor children. Believes regular lunch furnished at cost by school is nonsense.

Does not believe in adjustable furniture. Doesn't believe that children can get spines injured by the few hours they spend in school. School really corrects bad habits children secure outside. "Teachers keep after them all the time, making them sit up straight, and that's what they need — not desks and chairs made so that they have to sit up straight in spite of themselves. What they need is training in will power."

Doesn't believe in systems of ventilation. Most of the talk about it is nonsense.

Doesn't think a little bit of leaking gas does any particular harm.

There is no particular point in trying to find out what gives children colds. "They just have them and have to get over them. Sometimes we find a whole room peppered with coughing. That's not our fault. We can't do anything about it. It's the parents' fault if they send children to school sick."

This conversation is reproduced here because it illustrates what may happen when supervision is removed and no responsibility is felt towards leader or coworkers. The opinions here expressed are not typical of Brookline school doctors. It is the belief of the writer that were medical inspection in Brookline a group instead of an individual activity, were conferences held and reports compared, such an interview would be impossible.

The scientific interest and social attitude of at least four of the existing staff would force every member to regard health work in the public schools as worthy of careful and serious approach.

Inspection for Contagious Diseases.

During the first decade medical inspection in Brookline was confined almost entirely to inspection for contagious diseases, and even today a large part of the medical inspectors' time is spent at this work. Each inspector aims to make at least two visits a week to the schools under his care. Each physician has a different method of carrying on this form of inspection. They are supposed to examine all children who have been absent from school and have just returned and also to look at any children in the school who may be exhibiting symptoms of illness and have not yet been sent home. Physicians agree that they very rarely find a case of contagious disease within the schoolroom. Visits are made only two mornings out of the five and the doctor usually does not arrive until school has been in session at least half an hour. As a result, any child who is ill is almost sure to be noted by the teacher before the doctor can be consulted and is usually sent home at once.

On his morning visit the doctor enters the room, says "Good morning" to the teacher and, standing in front of the room, runs his eyes quickly over the 40 children there assembled. Turning to the teacher he says, "Has any one been absent?" If one or two children have just returned to school they are usually called to the front and the doctor asks them what was the matter and whether they feel all right now. This describes the best form of morning examination seen during a period of serious epidemic. In several cases, although the Survey visitor was present and the object of her visit was known, the doctor forgot to ask for any absentees, and, after chatting pleasantly with the teacher, left the room without apparently having looked at any of the children.

So far as the actual detection of cases of contagious disease goes, these morning inspection visits are of practically no value, since, as has already been explained and is frankly stated by the

physicians themselves, children who are ill are almost universally found and sent home before the doctor arrives. Any value which these visits have probably comes from the fact that children and teachers are reminded every few days of the importance of keeping well and being on the alert for signs of contagious disease. The presence of the doctor gives the teacher a feeling of confidence which she might not otherwise have. It is, however, seriously open to question whether the time of these highly skilled physicians is best employed in such service.

Examination for Physical Defects.

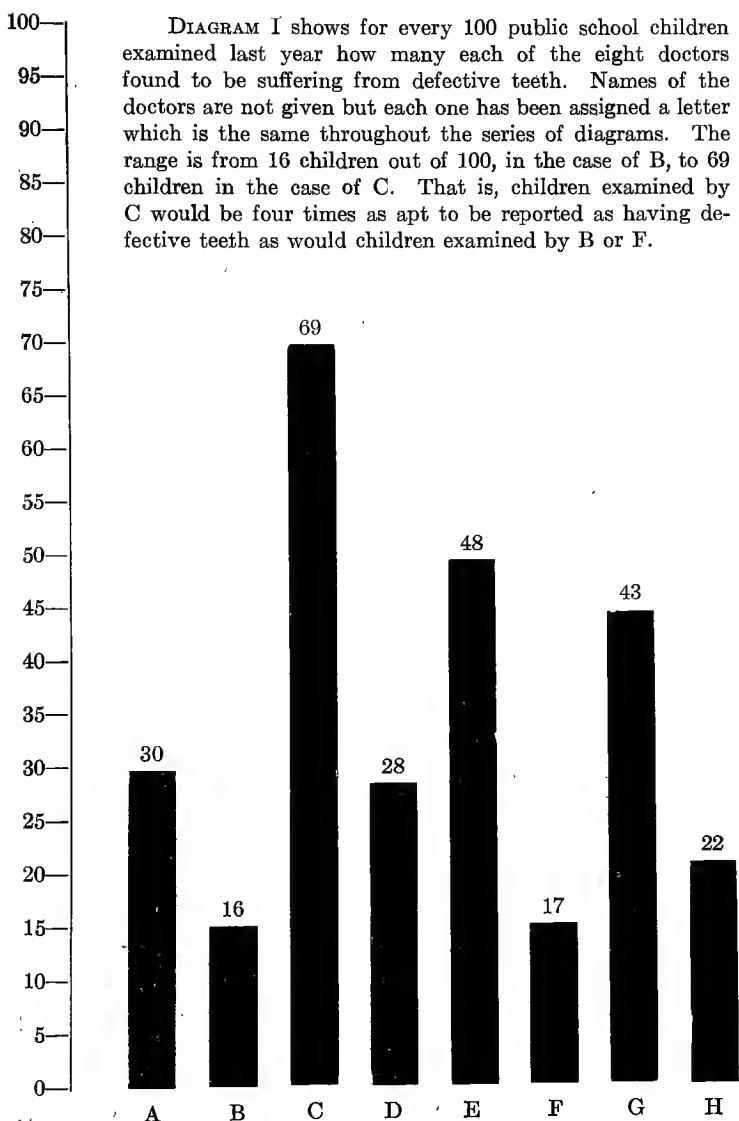
Under the regulations of the State law every child in the public school must be examined at least once a year in order to ascertain whether he suffers from physical defects which may interfere with his taking full advantage of the public education offered him. The law also provides that not only must these yearly examinations be made, but record must be kept of defects found and notices sent to parents. Each medical inspector in Brookline chooses a different plan for making his yearly examination. Some give attention to little more than teeth and throat, while others have elaborate schedules which they carefully fill out in the case of every child. In many cases observed, defects noticeable at first glance were passed over without comment. Bent shoulders, crooked backs, or fallen arches, for example, were rarely noted. Perhaps the single item most neglected is the matter of mouth breathing. In one class of 40 children 13 were counted who breathed through their mouths and bore the external signs of adenoids. Yet the medical inspector standing in front of the room commented upon the excellent appearance of the children. Other inspectors explained that since digital examinations for adenoids are out of the question in school work, it is a waste of time to pay attention even to the most pronounced cases of mouth breathers.

Not only do the actual methods of yearly examinations vary in different schools and with different inspectors, but the methods of recording also vary. In some cases blank books are kept in which children's names are entered and the defects found are

placed beside them. Sometimes these blank books are retained by the principals as their personal property. In other cases the physician carries them with him. Sometimes notes are made on loose sheets of paper, which are then given to the teacher, to the principal, Physical Training teacher, or nurse, or kept by the school physician.

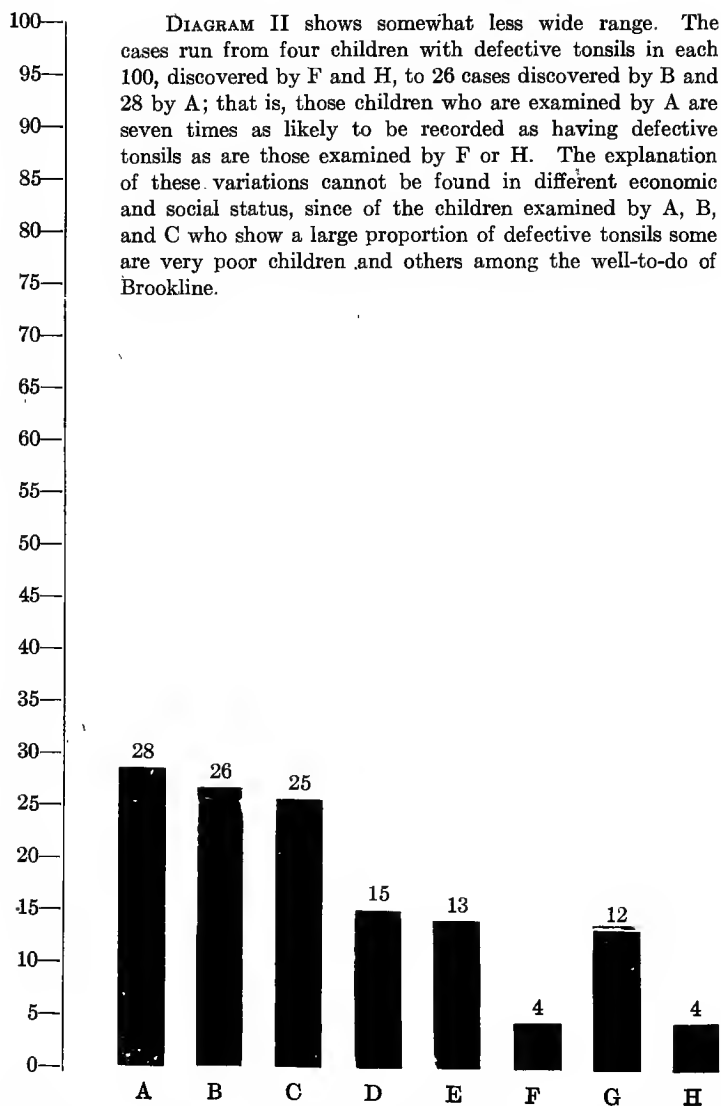
Individual record cards are kept for each child, but there is a wide diversity of opinion concerning the rules which have been laid down for filling out these cards. Some physicians claim that they have been instructed never to put down any defect which is not sufficiently serious to call for immediate attention by the family physician. Accordingly, the schools under the charge of these physicians are given almost a clean bill of health. Moreover, where this rule is followed small defects which are gradually growing worse fail to be noted, so that the attention of parents, is not called to them until they reach an advanced stage. Certain of the other physicians, however, say that they have never heard of any such rule, and put down on the cards all the defects they discover. Some physicians make special note of early signs of tuberculosis, others do not. Some physicians claim that all cases of cardiac trouble should be reported; while others say that notice should be sent home and record made of only cases showing aortic lesion. Some physicians confine their records to a description of what was found, while others make a definite diagnosis. Some accompany records with explanatory remarks. There is no uniformity as to recording follow-up work or its results.

As a basis for comparing methods of recording an analysis was made of the individual health cards of all children in the second and eighth grades of the Brookline public schools during the year 1915-16. Physicians were listed in order, and a study was made to discover how far records of physical defects are determined, not by the condition of the child, but by the identity of the doctor who examines him.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED RECORDED
AS HAVING DEFECTIVE TEETH BY EACH OF EIGHT
MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

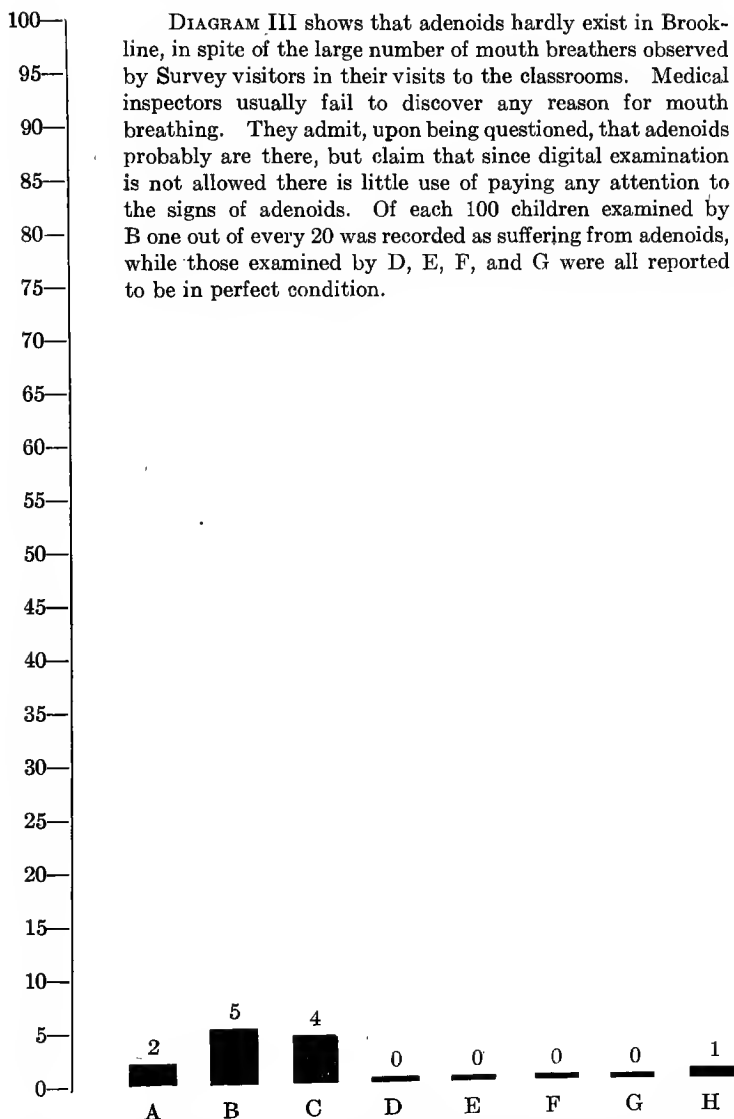
DIAGRAM I.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED RECORDED
AS HAVING HYPERTROPHIED TONSILS BY EACH OF EIGHT
MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

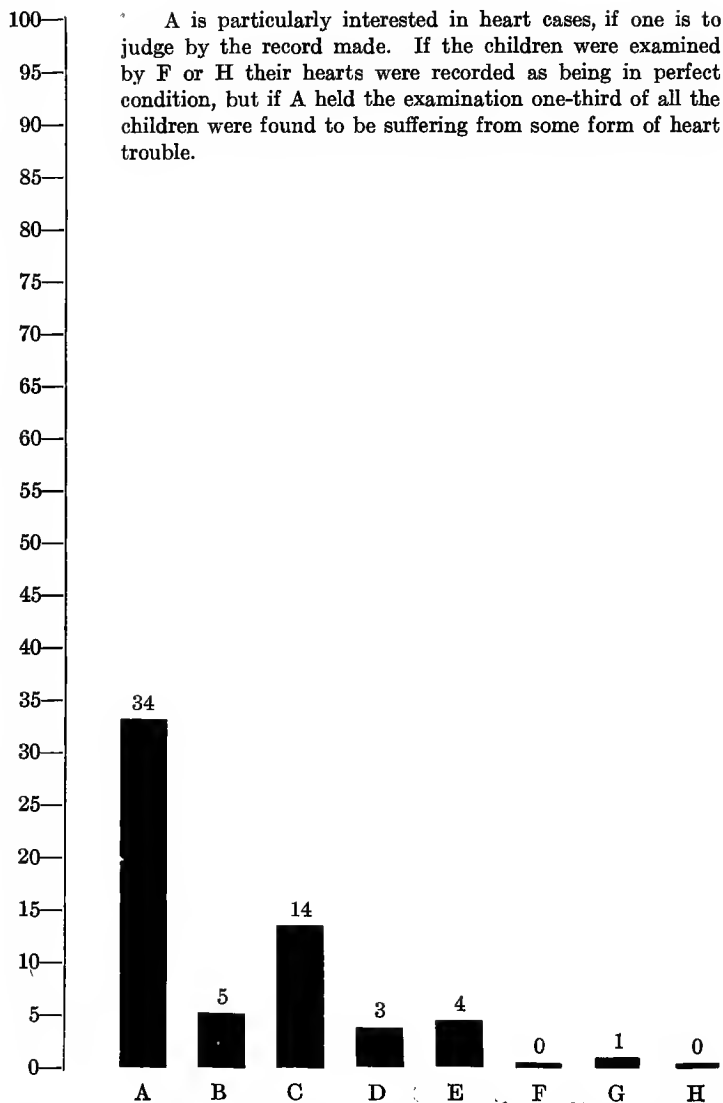
DIAGRAM II.

DIAGRAM III shows that adenoids hardly exist in Brookline, in spite of the large number of mouth breathers observed by Survey visitors in their visits to the classrooms. Medical inspectors usually fail to discover any reason for mouth breathing. They admit, upon being questioned, that adenoids probably are there, but claim that since digital examination is not allowed there is little use of paying any attention to the signs of adenoids. Of each 100 children examined by B one out of every 20 was recorded as suffering from adenoids, while those examined by D, E, F, and G were all reported to be in perfect condition.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED RECORDED AS HAVING ADENOIDS BY EACH OF EIGHT MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

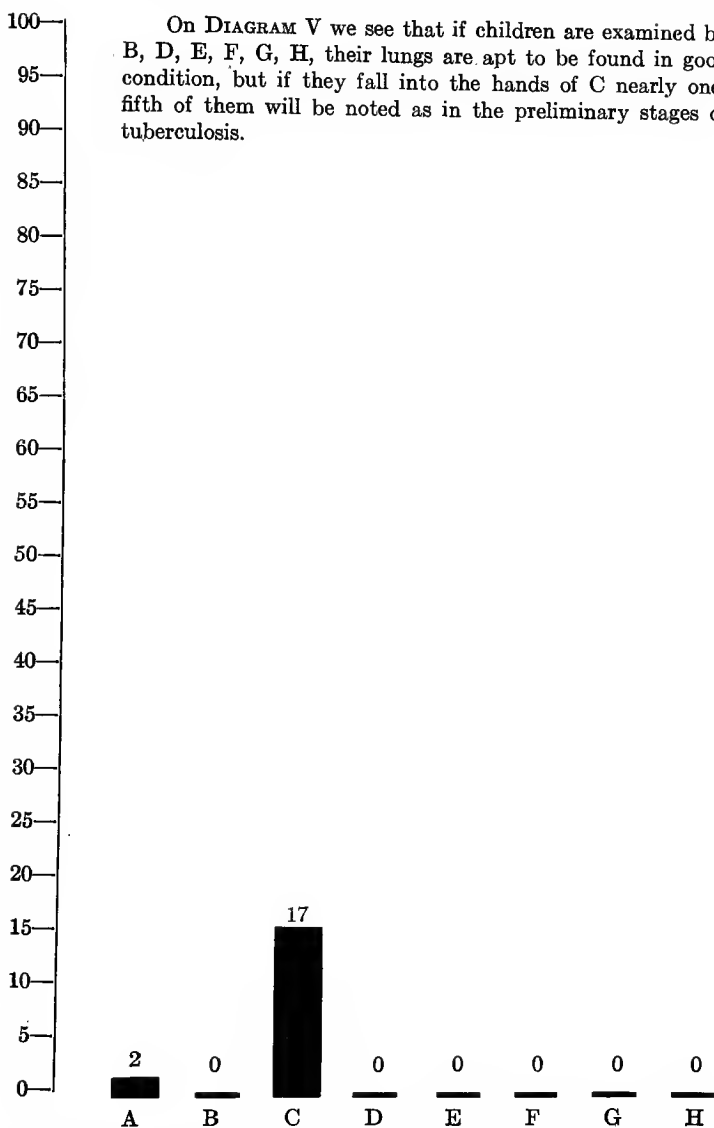
DIAGRAM III.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED RECORDED
AS HAVING DEFECTIVE HEARTS BY EACH OF EIGHT
MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

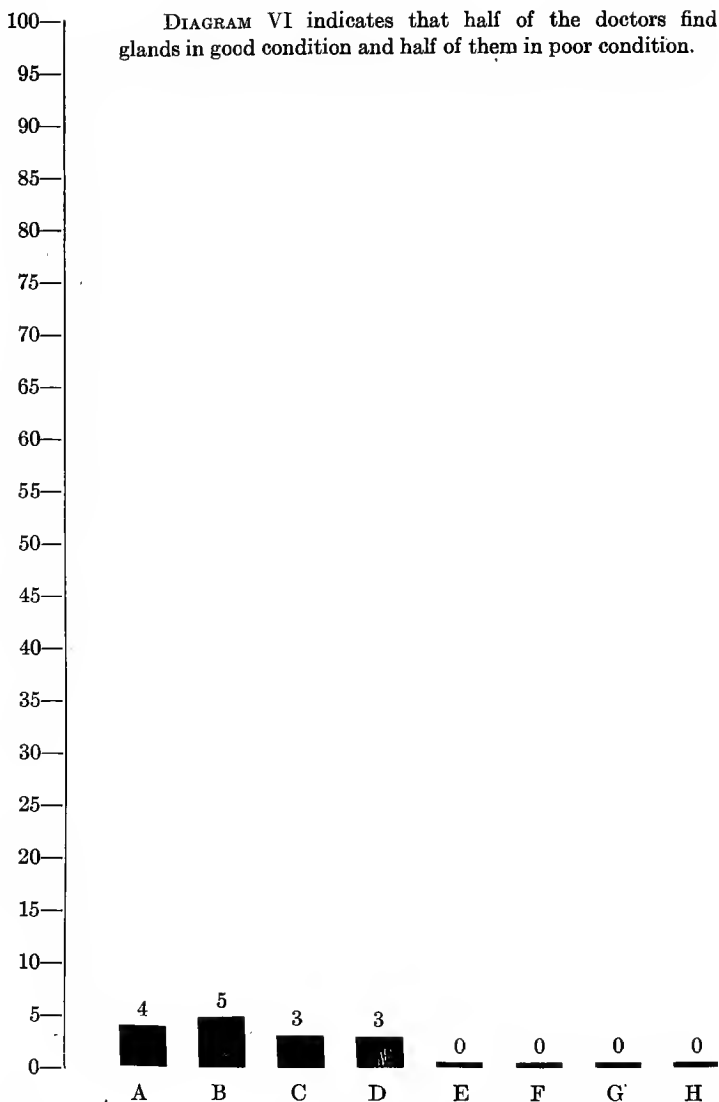
DIAGRAM IV.

On DIAGRAM V we see that if children are examined by B, D, E, F, G, H, their lungs are apt to be found in good condition, but if they fall into the hands of C nearly one-fifth of them will be noted as in the preliminary stages of tuberculosis.



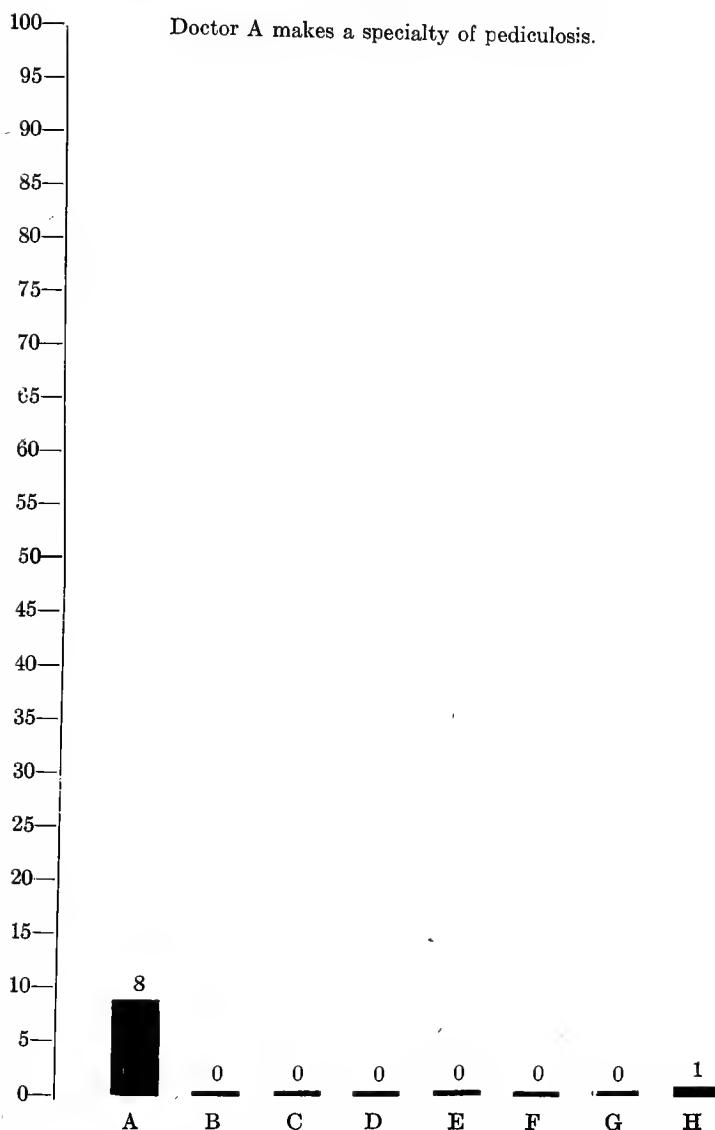
PER CENT OF ALL SCHOOL CHILDREN EXAMINED RECORDED AS SHOWING SYMPTOMS OF TUBERCULOSIS BY EACH OF EIGHT MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

DIAGRAM V.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED RECORDED
AS HAVING ENLARGED GLANDS BY EACH OF EIGHT
MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

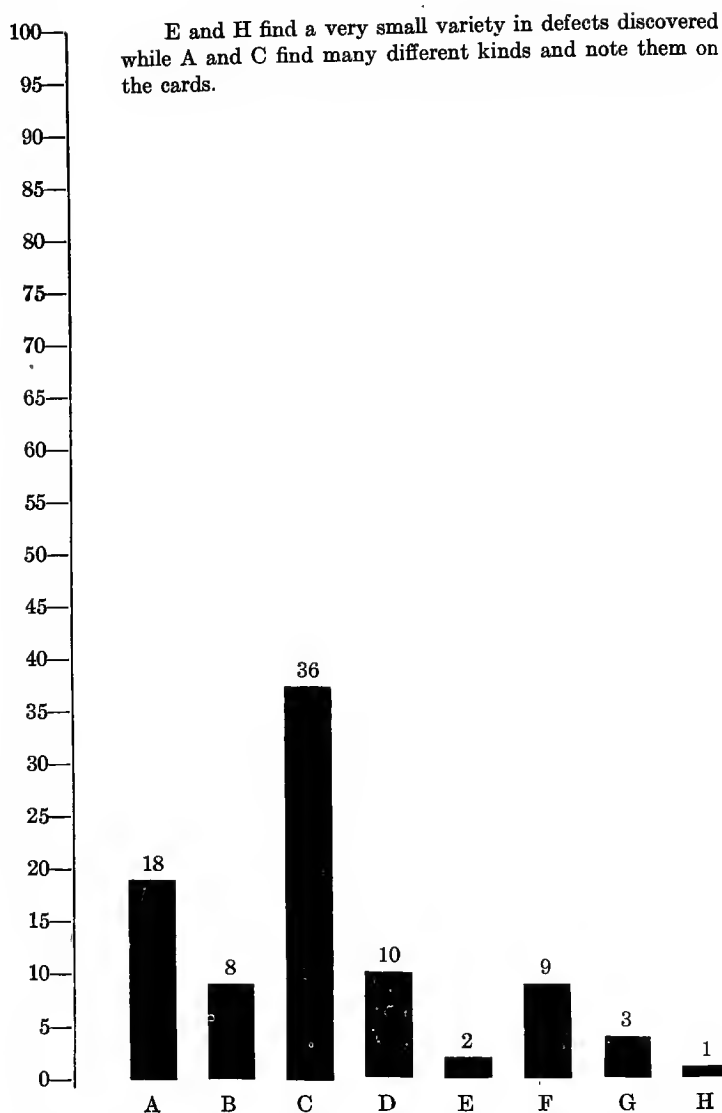
DIAGRAM VI.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED RECORDED
AS HAVING PEDICULOSIS BY EACH OF EIGHT MEDICAL
INSPECTORS, BROOKLINE, MASS., 1915-16.

DIAGRAM VII.

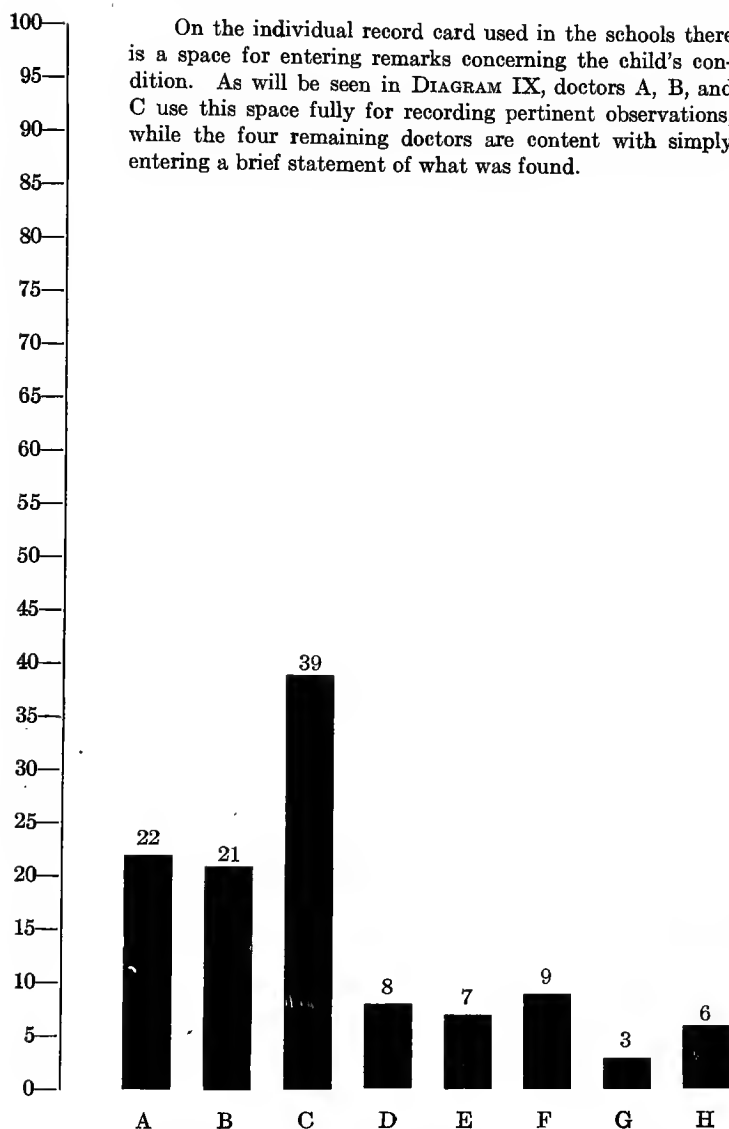
SCHOOL SURVEY OF BROOKLINE



PER CENT OF ALL SCHOOL CHILDREN EXAMINED RECORDED
AS HAVING OTHER DEFECTS BY EACH OF EIGHT MEDICAL
INSPECTORS, BROOKLINE, MASS., 1915-16.

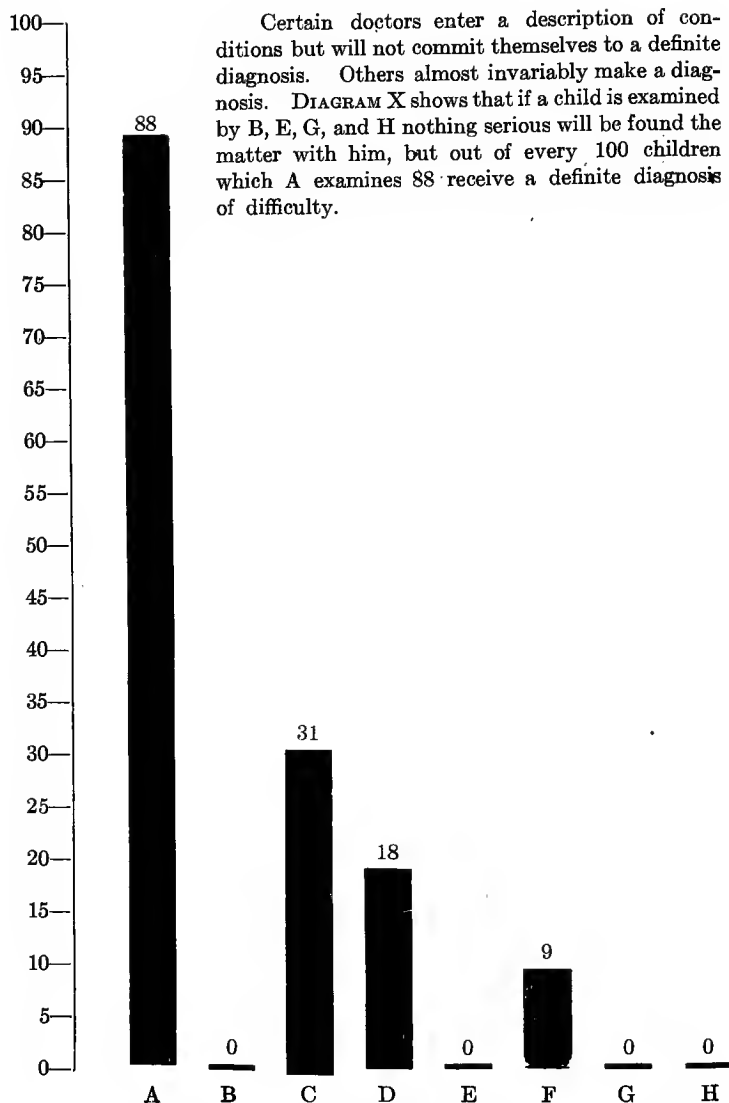
DIAGRAM VIII.

On the individual record card used in the schools there is a space for entering remarks concerning the child's condition. As will be seen in DIAGRAM IX, doctors A, B, and C use this space fully for recording pertinent observations, while the four remaining doctors are content with simply entering a brief statement of what was found.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED FOR WHOM EXPLANATORY REMARKS WERE ENTERED ON RECORD CARDS BY EACH OF EIGHT MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

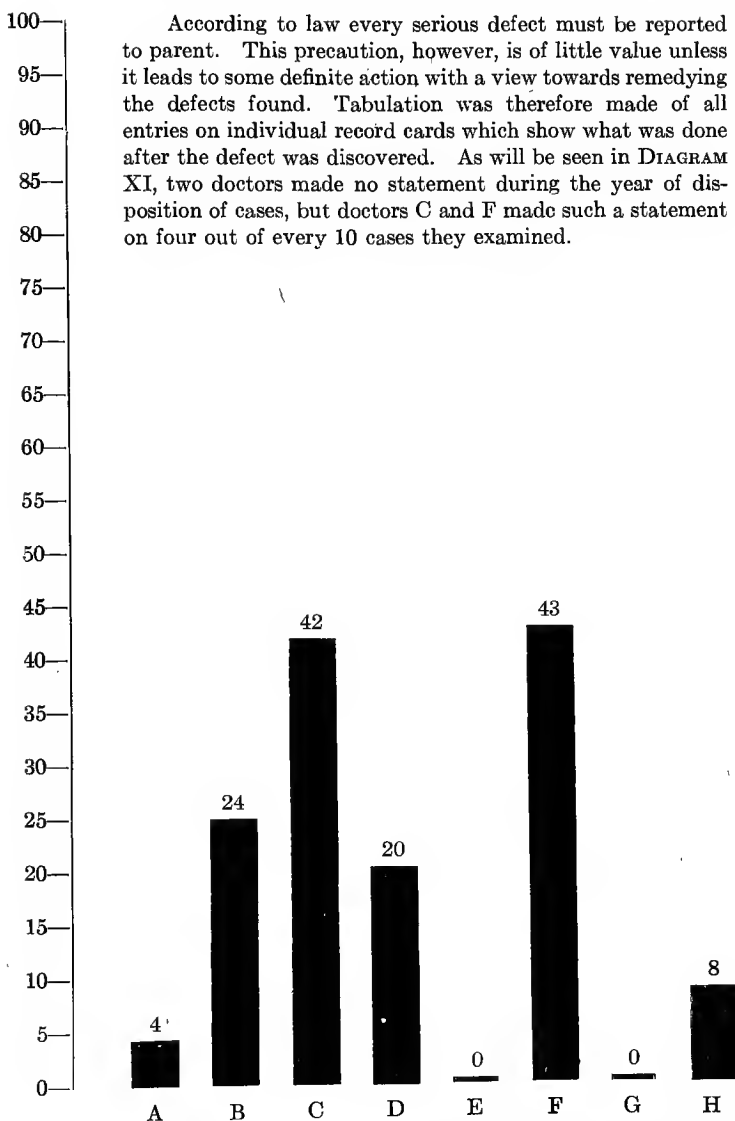
· DIAGRAM IX.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED FOR WHOM
DIAGNOSES WERE RECORDED BY EACH OF EIGHT
MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

DIAGRAM X.

According to law every serious defect must be reported to parent. This precaution, however, is of little value unless it leads to some definite action with a view towards remedying the defects found. Tabulation was therefore made of all entries on individual record cards which show what was done after the defect was discovered. As will be seen in DIAGRAM XI, two doctors made no statement during the year of disposition of cases, but doctors C and F made such a statement on four out of every 10 cases they examined.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED FOR WHOM
DISPOSITION OF CASE WAS RECORDED BY EACH OF EIGHT
MEDICAL INSPECTORS, BROOKLINE, MASS., 1915-16.

DIAGRAM XI.

The diagrams which are here shown are, as has already been stated, based upon the records made during the past year for second and eighth grade children in the public school. It is true that many of the doctors keep their records in blank books or on loose sheets of paper and do not transfer them to these cards. The diagrams do not properly represent all the defects found. They do, however, represent the only evidence which is on file and kept as a permanent record. It is on this evidence that the work of the individual doctors must be judged.

Comparative Findings.

In the annual reports of the chief medical inspector for 1907, 1908 and 1909 records are given of the examination of children in certain schools. It is interesting to compare the results of these yearly examinations with those for the second and eighth grades made and reported in 1916.

PER CENT OF CHILDREN EXAMINED REPORTED AS HAVING DEFECTIVE TEETH IN 1907, 1908 OR 1909, AND 1916, BROOKLINE.

<i>School</i>	<i>1907, '08 or '09</i>	<i>1916</i>
Pierce.....	75%	43%
Lincoln.....	84	42
Longwood.....	47	42
Cabot.....	60	23
Runkle.....	61	17
Sewall.....	89	15
Devotion.....	60	12
Parsons.....	92	8
Lawrence.....	58	4

The figures for the early years include some children with a few defects and some with seriously defective teeth. Those for 1916 include every case where reference to dental examination appears on the card, regardless of the amount of defect it represents.

CHILDREN REPORTED AS HAVING HYPERTROPHIED TONSILS,
PIERCE SCHOOL.

1907.....	21%
1916.....	10

CHILDREN REPORTED AS HAVING ADENOIDS, PIERCE SCHOOL.

1907.....	30%
1916.....	none

PER CENT OF CHILDREN EXAMINED REPORTED AS SUFFERING
FROM EAR, NOSE, OR THROAT DEFECTS
1908, 1909 AND 1916.

<i>School</i>	<i>1908, 1909</i>	<i>1916</i>
Devotion.....	23%	26%
Lawrence.....	25	12
Lincoln.....	26	12
Parsons.....	35	none

In this table the 1908 and 1909 figures show the per cent of children examined referred to physicians for treatment. The 1916 figures show the per cent of cards bearing indication of trouble with ear, nose, or throat, regardless of whether any recommendation was made concerning it.

Adenoids are very rarely reported in the 1916 records. The chief reason for this is that the diagnosis is difficult to make, and medical inspectors hesitate to express an opinion. It is the opinion of the Surveyor, however, that difficulties of diagnosis should not be allowed to result in the present almost complete disregard of the whole question. Mouth breathers are noticeably numerous in the Brookline schools. Several are found in almost every class.

It is not fair that these children should be allowed to go through school without receiving medical care. If the school doctor does not wish to take the responsibility of examination and diagnosis the services of a specialist should be secured and every child who shows suspicious symptoms of adenoids should be referred to him for further examination. Upon this point the Surveyor is heartily in accord with the discussion presented

by Dr. H. Lincoln Chase, former chief medical inspector, in his 1913 report, which reads as follows:

"The comparative frequency with which diseased adenoids are found, if properly examined for, and the serious damage they often cause the child's hearing and mental development, are now so well known that failure to provide specialists for this part of the examination in all the Brookline schools seems to the writer wholly unjustifiable and to demand immediate consideration and action by the School Committee."

While the figures above are not conclusive they are, nevertheless, highly suggestive. In the first place, with one exception, every comparison shows that if these figures are to be taken at their face value the children who lived in Brookline eight years ago were uniformly and strikingly more defective than those who attend the same schools today. Unless we are to believe that a marvelous change in public health has been brought about within the past decade we must conclude either that the medical inspectors are failing to find defects which exist, or that they are not recording those they find.

Study of pupil health cards, tabulation by individual medical inspectors, and comparison of earlier figures with those of 1916, clearly indicate the following suggestions:

(a) Each inspector should have a definite idea of what he is expected to look for.

(b) He should clearly understand the degree of defectiveness which demands (1) that it be entered on card, (2) that parents be notified.

(c) He should know exactly what the terms used by every other inspector mean.

(d) He should be required to enter all results of examinations on the individual pupil health cards instead of in blank books or on loose sheets of paper.

(e) He should be required to give regular written reports upon examinations made, defects found and defects remedied.

(f) These reports should regularly be compared in staff conference so that each inspector may gain a clear understanding of what other members of the staff are doing.

Reports.

No reports are asked for from either nurse or medical inspectors. Inspectors are expected to spend at least two hours a week in the schools. They arrange their own schedules and spend extra time if they see fit. They are paid by the hour. No record is made of their visits, or of what they do; but at somewhat irregular intervals they present their bills to the School Committee, giving the total number of hours spent in school work.

There are no regular reports of examinations made or results found. In fact, the Chief Medical Inspector, in speaking of this aspect of the work, said "I trust my staff. They are all high-grade people. To ask for reports seems too much like spying. . . . I have confidence that they are all doing their best for the children."

Probably the Chief Medical Inspector is right in feeling that the members of his staff are conscientious and trustworthy. It is, however, the opinion of the Surveyor that because of the very fact that most of the medical inspectors of Brookline are of distinctly superior character and ability they would welcome any intelligent effort towards establishing a system of reporting which would enable them to judge the efficiency of the work which they are doing. Most of them have had sufficient experience in hospitals and other big organizations so that they realize the importance of properly kept records and regular reporting. A request for monthly or quarterly reports would be more likely to increase their respect than to hurt their feelings. Until regular reports are made and conferences held on the facts reported the work in Brookline will continue to be wasteful and inefficient.

It is also highly desirable that the annual report of the School Committee carry with it a somewhat detailed contribution from the Chief Medical Inspector describing the work that has been carried on during the past year and bringing up for the consideration of the town those matters which need action during the coming year. In a very direct way, the success of any medical inspection work depends upon the intelligence and co-operative feeling of the town. It is therefore essential that reports made by the school authorities to the citizens should carry with them

material which will serve to let the citizens know what medical inspection work is being carried on and where they can best help.

Notices to Parents.

The State law requires that notice of any defect or disability which is serious enough to require treatment shall be sent to parents of the child. In accordance with this provision Brookline provides a card with blank spaces for name of child and statement of defect; and the printed suggestion that the child be referred to the family physician or dentist. No provision is made for ascertaining whether parents take any action. In some cases the nurse or teacher asks the children a few weeks later whether they have been taken to a doctor, but usually the matter is allowed to drift.

It is a waste of valuable service for medical inspectors to examine children if nothing happens as a result of the examination. The test of medical inspection efficiency is not primarily the number of children examined, or of defects found, but the relation of action secured to action recommended. Five cases of defective vision discovered and corrected with glasses are of greater value to a school system than 50 cases discovered and neglected. It is not enough to claim that Brookline parents need no urging to care for the health of their children. This may possibly be so; but it cannot be taken for granted. Experience in other communities has clearly demonstrated that the number of defects rectified bears a constant and direct relation to the efficacy of the follow-up system.

With every notice sent out there should be a return card to be filled in by the parent telling what action if any has been taken. When action has been secured statement of the fact should be entered on the individual pupil health card, which is kept on file by the teacher. At the end of the year each medical inspector should be required to report not only the defects discovered, but what was done about each case, and the effectiveness of the work in his school should be judged by the relation between the two sets of data.

Preventive Work.

Medical inspection in its broadest sense may be divided into three main lines of activity. First, and historically the oldest, comes the inspection for contagious disease. This is relatively the least important of all the different branches of the work. It occupies the least time, and, while necessary for the conduct of the schools, has the least effect in teaching children how to live in such a way that they will be strong and healthy.

The second form of medical inspection work is that which is mainly ameliorative. It seeks to discover defects which already exist and to do something about them. It takes children who are physically handicapped and either seeks to cure them or to reduce the defects sufficiently so that they can get along a little better in their school work.

The third, and by far the most important form of medical inspection is that which has to do with prevention rather than with discovery or cure. It does not wait for children to become sick or deformed. It takes the children who are well and tries to teach them how to keep themselves from becoming ill. When medical inspection was first started in Brookline, school men in other communities predicted for it an important future along this very line. It was believed that Brookline was about to lead the way in showing how to teach health so that the teaching would really function.

Today Brookline falls far behind its early promise. It has no uniform policy for carrying on preventive work. Individual doctors and the nurse do a good deal, but only by spasmodic attempts here and there. One doctor has instituted toothbrush drills and children's hygiene clubs. Three doctors have done some work with parent conferences, and several of the doctors talk to individual teachers occasionally about the importance of the medical work. But there is no uniform, definite policy for health instruction to pupils, health conferences with teachers, systematic calling of parent conferences, talks with individual parents, inspection of hygienic conditions in school buildings, or health classes for janitors. Health teaching is probably the biggest part of modern medical inspection work. It is a field

that is as yet largely undeveloped even in the most progressive cities, and in Brookline it is almost untouched. When rightly viewed and efficiently conducted the work of the Medical Inspection Department becomes not only a medical activity, but an education activity of high importance.

Dispensaries.

It is exceedingly difficult to carry on effective health work without a special room set apart in each school building for use as a dispensary. The Devotion Grammar School has such a room. It is well lighted, easily accessible, properly furnished, and has attached to it a toilet room with hot and cold water. It is the only building in Brookline where health work is taken seriously enough to provide a special room for it.

Most of the school physicians are obliged to make their examinations in any corner which happens to be vacant. At the Heath School the stage dressing room proves fairly satisfactory. At the Pierce the library is utilized, at the Lincoln examinations are made in an old, dark, and discarded classroom, and at several of the other schools doctors are forced to use the teachers' rest room or even the main corridor.

There are no cabinets for medical supplies. Tongue depressors are dropped into convenient drawers, or wrapped in paper and carried from room to room. Only a few of the schools are provided with scales for measuring weight. Little is done to make the doctor's task easy or effective.

Every school should have a room definitely set aside for the use of physician and nurse. Even in old buildings space can usually be found for such a room, and a little money and ingenuity will make it usable. Rooms should be painted white, well lighted, with adjustable window shades, and provided with good artificial light as well. There should be at least one small table with a drawer, several chairs, a screen, a medical cabinet with lock for holding supplies, hot and cold water with soap, paper towels, and if possible a toilet adjoining, a white enamel pail for waste materials, a filing case and index for filing physical examination cards, a supply of blank forms, and a simple first

aid equipment. Every school in Brookline, primary, elementary, or secondary, should be supplied at once with such an office for the use of medical inspector and nurse.

The School Nurse.

Brookline has one school nurse, who has been in the employment of the Department since 1909. If two other nurses of the same caliber could be secured the medical inspection work in Brookline would more than double its strength. In terms of improved health of the school children this one school nurse is probably more effective than the entire rest of the staff. This is because her chief activity is the following up of defects noted. Her work is confined to the less well-to-do children of Brookline, and consists very largely in talking with children, making personal visits to their homes, conferring with teachers, and taking children to different medical dispensaries for treatment.

If at the beginning of her work there was any doubt in Brookline as to the desirability of having a school nurse, results already secured present incontrovertible evidence as to the value of her services. In talking with principals and medical inspectors concerning the possible extension of the work, very few adverse comments were heard. One principal said that she did not wish the school nurse to do any follow-up work because she felt that the relation of principal with pupils and parents was so intimate and personal that it ought not to be shattered by the intrusion of a third person. One of the medical inspectors stated that he believes a school nurse would be useful in an entirely subordinate capacity to the medical inspector. He felt that she could be employed in taking children back and forth between the school and the medical dispensary, or in other ways running errands for the inspector. He did not feel that she should ever be allowed to act upon her own initiative.

It is noticeable that neither of these speakers has had personal experience with the nurse who is now employed by Brookline, since the schools with which they are connected do not belong to the group where the school nurse has concentrated her efforts. In every case where the question of employing school nurses was

discussed with persons who had tried the plan the response was favorable, immediate, and enthusiastic.

"I should like a full-time nurse for both of my schools. I don't want to share her with any one else." (*Medical Inspector.*)

"I could gladly keep the present school nurse busy all the time." (*Medical Inspector.*)

"I don't see half enough of the school nurse. I could use her at least two days in every week." (*Principal.*)

"I could use at least one-half of a nurse's time right here in this school" (*Principal.*)

"I am strongly in favor of additional nurses for follow-up work among the older girls." (*Medical Inspector.*)

"I think that if we had two more nurses they could handle between them the Cabot, Driscoll, Longwood, Runkle and Devotion Schools." (*Medical Inspector.*)

"I should personally think that if we had additional nurses they could do the follow-up work, which badly needs attention, and also carry a good deal of the inspection for contagious diseases." (*Medical Inspector.*)

"I could use the entire time of the school nurse just in this one building." (*Principal.*)

"I told one of the doctors that the school nurse was worth a dozen medical inspectors — and that doctor agreed with me." (*Principal.*)

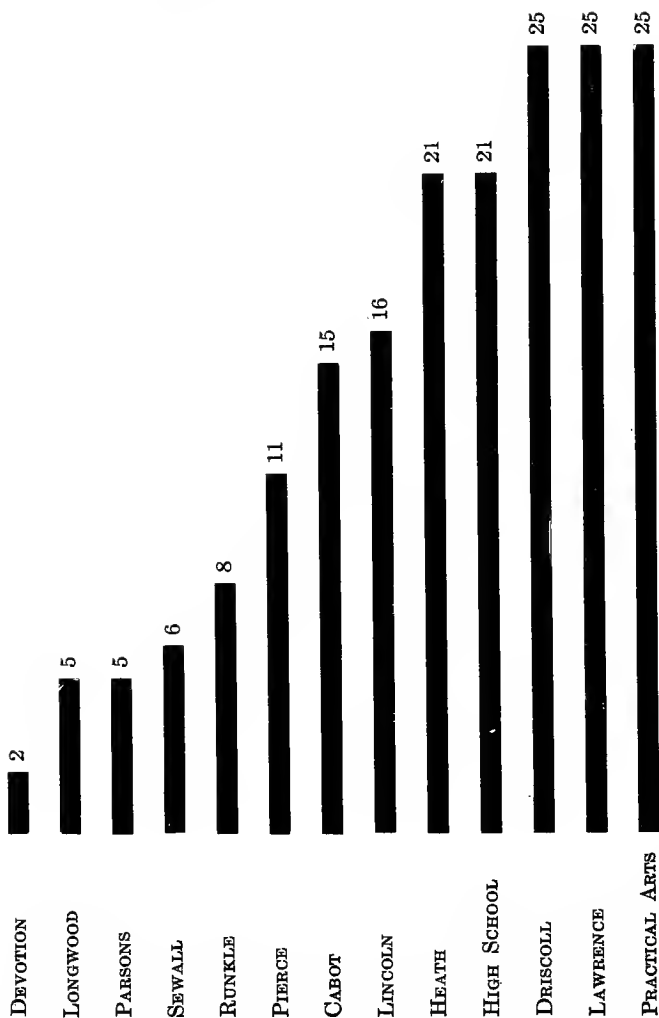
"I hardly think that parents would like it if we had some one here called a school nurse, but if we could call her a school visitor I think her services would be very desirable and that she could do good work among the parents." (*Principal.*)

The services of a competent school nurse are of such impressive value that authorities are now suggesting that where both doctor and nurse cannot be employed because of shortage of funds the money should be put into the salary of one or more school nurses and no doctor should be employed. It is now an accepted principle in medical inspection administration that the number of nurses in every school community should be greater than the number of doctors. They should work with doctors wherever possible, but a nurse can do effective work without a doctor, while

it is almost impossible for a doctor to do effective work without a school nurse.

The school nurse assists the doctor in his annual physical examination; she helps him with the examination, and enters records on the card. When defects are discovered she attends to sending notices to the parents and to receiving their replies as to what has been done. In cases where no reply has been received from the parent she makes personal visits to explain the nature of the trouble and the importance of having it remedied. She invites parents to the school to meet the doctor. Where they are poor she gains their consent to take children to a public clinic. She accompanies the children there and takes them home again. She holds conferences with mothers and teaches them how to care for the health of their children. She conducts health classes among children and teachers. She is not only a nurse, but she is actually a hygiene teacher in the school.

Such is the work of the modern school nurse. The present nurse in Brookline, apparently without supervision and largely on her own initiative, has introduced most of the forms of work here mentioned. It is unfortunate that because of lack of time and strength she is obliged to confine her work to schools in the poorer sections of the town, for there is ample evidence that children of the well-to-do are nearly as much in need of wise and skillful care as are children of the poor. Parents who are genuinely interested in the care of their children are the first to welcome the services of the school nurse; and if the leading citizens of Brookline are wise they will demand that no child in the Brookline public schools shall be refused a share in the health teaching merely because his parents have money.



PER CENT OF ALL SCHOOL CHILDREN EXAMINED BY
TEACHERS WHO WERE REPORTED AS HAVING DE-
FECTIVE EYESIGHT, BROOKLINE, MASS., 1916.

DIAGRAM XII.

Vision and Hearing Tests.

In accordance with the provision of the Massachusetts State law, tests of vision and hearing are made annually by the teachers and reports of the conditions found sent to the State authorities. Diagram XII shows the per cent of all children examined in each school who were reported to be suffering from defects of vision. Figures range from two per cent in the Devotion School to 25 per cent in the Driscoll, Lawrence and Practical Arts Schools.

The results of American and European experience show that at least 10 per cent of all school children are suffering from seriously defective vision. This is the minimum proportion and careful examination will almost invariably disclose a considerably larger number. In Brookline it will be seen that five schools report less than 10 per cent defective and eight schools report more than 10 per cent.

This high showing indicates two things — first, that apparently Brookline teachers are skillful at detecting imperfect vision. In the second place the findings indicate that defective vision is very commonly found in Brookline and that special care must be taken to follow up the results and see that every child who shows need of treatment is actually placed under the care of a competent oculist.

Diagram XIII, which is on the same scale as Diagram XII, represents the per cent of all children examined in each school who are reported by the teachers as showing defective hearing. In this case the comparative showing is not so good. Per cents range from no cases of deafness found in the Sewall School to nine per cent of all cases found defective at the high school. It is generally stated that examination will show that at least five per cent of all school children have defective vision, and if examination is made very carefully a considerably higher percentage will usually be found. In only one school in Brookline was the percentage of deafness recorded as higher than five. This indicates that teachers are not so successful in locating defective hearing as they are in locating defective vision.

In placing the examination of eyes and ears in the hands of school teachers it was not the intent of the Massachusetts law to

SEWALL	10
DEVOTION	1
RUNKLE	1
PIERCE	1
LAWRENCE	1
LONGWOOD	2
LINCOLN	2
PARSONS	3
HEATH	3
CABOT	3
PRACTICAL ARTS	3
DRISCOLL	4
HIGH SCHOOL	9

PERCENT OF ALL SCHOOL CHILDREN EXAMINED BY
TEACHERS WHO WERE REPORTED AS HAVING DE-
FECTIVE HEARING, BROOKLINE, MASS., 1916.

DIAGRAM XIII.

forbid examination by physicians employed by the school. The law seeks to see to it that every child, even where medical inspection is not enforced, receives attention in these two important fields. In Brookline several of the medical inspectors expressed the opinion that, since teachers made tests of hearing and vision, medical inspectors are supposed to "keep hands off" and have no responsibility in the matter. In the opinion of the Surveyor, this is an unfortunate attitude. As is shown by Diagram XII, teachers are very successful in giving vision tests. Almost undoubtedly the hearing examinations could also be made more effective if the Medical Inspection Department took special pains to see to it that teachers understand how to use the test and know what symptoms to look for in regular classroom work. The department should co-operate in every way with the teachers in order to help them carry out the provisions of the law, and in all cases where teachers are in doubt they should be able to refer the child to some one in the Medical Inspection Department who would be competent to make a more complete examination. In the 1907 report by the School Committee Dr. Chase writes: "It should be understood that the recent act passed by the legislature, providing for the examination of the vision only of school children by the *teachers*, while a step in the right direction, will in itself be quite inadequate as a means of finding out all those who are in reality suffering from eye strain."

The department should also take charge of following up the results of examinations and seeing to it that, in the case of every child who is reported as suffering from defective vision or defective hearing, parents are notified and special efforts made to secure proper treatment. The teacher should not be held responsible for the success of the medical inspection follow-up work on these two features.

The work now being done in detecting defects of vision and hearing is of good quality, but can be strengthened if the school physicians will co-operate more fully. This is a most important branch of the medical inspection work, and deserves every help which inspectors can give to make it more effective.

Special Classes for Physically Handicapped Children.

Not only is it essential that every child suffering from defective vision or defective hearing shall receive special examination and treatment at the hands of specialists in these fields, but it is also essential that, where any children are found seriously handicapped, special provision shall be made for them in the public school. For example, if a child cannot see the blackboard from his regular seat or if he cannot hear what the teacher says he should be given a seat near the front of the room.

If several children are found seriously handicapped it is usually necessary to provide a special room with special teacher where they will spend certain hours during the school day at special studies. It is usually not wise entirely to separate these children from normal children. They should be allowed to join with their fellows in exercises which they can easily do, but in all matters where strain is involved they should be given instruction under conditions planned to meet their needs. For example, if children are suffering from serious eye defects it is always desirable to place them in classrooms with special illumination. If children are incurably deaf it is frequently necessary to give them instruction in lip reading, so that they may freely communicate with other people, and if children stutter they should be given a few minutes of training each day by a highly skilled speech teacher. It is probably true that careful investigation would disclose cases of many children suffering from deafness, stuttering, malnutrition, or mental defects, which call for special classes or special forms of instruction.

Brookline already has data for considering the possibility of forming special classes for one group of the physically handicapped. Very recently a Massachusetts commission has been studying conditions of eyesight throughout the State. This commission has found many Brookline children with vision so seriously deficient that in its opinion special classes should be formed for them. It reports the following cases of pupils who should be included in such classes.

<i>School</i>	<i>Seriously Defective Eyesight</i>
Longwood.....	3 children
Driscoll.....	4 children
Sewall.....	5 children
Heath.....	6 children
Lawrence.....	9 children
Runkle.....	10 children
Devotion.....	11 children
Pierce.....	17 children
Lincoln.....	25 children
Total.....	90 children

This means if the report of the commission is to be accepted that there are today at least 90 children in the Brookline schools who are suffering from vision so seriously defective as to call for special classroom conditions. The question of the desirability of establishing such classes naturally falls to the Medical Inspection Department, which should without delay give careful consideration to the matter and lay its conclusions and recommendations before the School Committee.

The Fresh Air Class.

In September, 1911, a fresh air room was established at the Parsons School for children in the second grade. This room is still maintained. It is a fresh air class, but not what is technically known as an open air school.

Windows and doors are kept wide open, and temperature is maintained at about 55° F. Children are protected from the cold by sweaters and sitting-out bags which keep the lower parts of their bodies warm. For the first year careful record was made of height, weight, and general physical condition, but now little attention is paid to these matters.

The regime of the standard open air class is not followed. There are no cot beds or steamer chairs where children may rest in the open air. There are no special facilities for washing face or hands or cleaning teeth. No toilet is near. There is no effort to fortify children against the cold by supplying them with fuel

in the form of extra feeding. When the class was first started private funds were donated so that fresh air pupils might have a glass of milk in the middle of the morning, but lately this has been given up.

At the time that Survey tests were made the air of the classroom was very dry. On that day, moreover, most of the air came in by way of the door and stairway leading to the basement toilets and used the windows to escape; but this may have been a more fortunate arrangement than having air enter through the windows, since when the Surveyor touched the table she left an imprint of her fingers in the layer of dust which covered it. The surface of the playground is improperly finished, and every time the wind blows clouds of dust swirl through the windows and settle on the desks of children in the fresh air room.

The teacher of the fresh air class is keenly interested. She believes in its value and would argue hotly against it being given up. Yet there is grave question whether Brookline is justified in subjecting children to low temperatures while at the same time it pays so little attention to equipping them for open air study. It is certainly fortunate that the children who belong are strong and healthy instead of anæmic or pre-tubercular; for few sick children could stand the exposure.

An open air class should be run scientifically or not at all. When the health of children is involved there is no place for carelessness or half-way measures. If Brookline is to have a real open air class she must provide a room designed for that purpose, where air comes from outdoors instead of from the cellar, and where dust does not pour into the lungs of children. She must provide couches where children may sleep for an hour, outdoors, and warmly covered. Above all, she must provide hot and nourishing food, prepared under skilled direction, and in generous quantity.

Fresh air, rest, and food are three factors which have led to the success of the open air school. No one of the three can be dispensed with. Brookline, with its keen interest in the tuberculosis problem, should logically subscribe to the theory of the open air school. It might well have several classes instead of

one; but it must be prepared to conduct those classes according to accepted scientific procedure, with careful supervision for not one year only, but for every year. The open air class is too delicate an experiment to be started, carried on half-heartedly, and then forgotten.

Physical Training Department.

There is a noticeable lack of co-operation between the Medical Inspection and the Physical Training Departments. There is no machinery by means of which members of one group become familiar with the work of the other. The Physical Training teacher rarely has access to the individual health cards of pupils, nor does the school physician receive any report of the examinations made by the Physical Training people.

For example, last year the Physical Training Department made examinations of elementary school children with a view to ascertaining which ones needed corrective posture exercises. It should have been possible to secure all of this information, without delay by reference to the medical inspectors in charge, and special examinations should have been needed only for further study of cases where defects had already been noted. A specialist was employed by the Physical Training Department to conduct posture work for physically handicapped children, but apparently only one of the medical inspectors ever referred children whom he had examined to the Physical Training Department for special attention.

Something is certainly wrong in a system where two groups of people are supposed to be working for the same ends and yet rarely co-operate with each other. Physical Training should be closely associated with Medical Inspection. There should be constant reference of children by the medical inspectors to the Physical Training teachers and in turn the Physical Training Department should be able to count on the support of the medical inspectors in establishing various forms of school health activities.

Take this question of posture, for example. If children are discovered in the public school with fallen arches or crooked backs it is the duty of the school to see that these conditions are remedied.

Certain cases are so serious as to call for the attention of orthopedic specialists. Others can be greatly helped by simple exercises in school. Whether these exercises are carried on under the specific direction of a medical inspector or of a Physical Training teacher is immaterial. The important point is that whoever is placed in charge should be a specialist in corrective gymnastics, and fully competent to carry on the work.

The adapting of Physical Training classes to fit small groups of children with different needs is a tendency which corresponds to modern movements toward special classes for exceptional children, differentiated courses, varying promotion rates, and the like, which are rapidly changing our whole conception of school organization. The Medical Inspection Department not only should approve, but should demand, that the Physical Training supervisor make provision for meeting the special needs of children suffering from various types of physical handicap. Physical Training is an extension and specialization of the general health work field. Neither department can hope to carry on its work efficiently without the co-operation of the other.

Clinics.

A dental clinic has this year been established by the Board of Health in the Pierce primary building. Dental work is probably more important than any other single phase of ameliorative medical inspection work. Every school system should have a dental clinic where its children can be treated. The new clinic in Brookline will undoubtedly demonstrate its value within the first year of its existence.

It is suggested that in sending school children to the dental clinic preference be given to those in the primary grades. If an attempt were made to treat all children in all nine grades, the school dentist would never catch up with the task; but if those in the first, second, and third grades are treated and then followed up each year during their stay in school, the more serious dental conditions can be gradually eliminated. Concentrate effort on the younger children whose teeth have not yet become badly

damaged. It is particularly true in dental work that prevention is of greater importance than cure.

A tuberculosis clinic is also held under town auspices, and public school children are frequently taken there by the school nurse. This again is distinctly a move in the right direction.

There are no dispensaries or clinics conducted under direction of the school authorities. Several years ago the question of establishing such clinics was widely discussed and recommendations concerning them were adopted, but clinics themselves did not materialize. Nurse and doctors state that it is frequently difficult to secure proper attention for Brookline children in the public clinics of Boston. Eye, nose, throat, and orthopedic cases are usually put upon the waiting list and serious delay ensues.

If Brookline feels that it is too small a community to provide clinics for the sole use of its own children, it should make some provision so that children who need attention will not have to be dependent upon the casual courtesy of a neighboring metropolis. Brookline has for several years furnished schoolhouses and teachers for Boston children upon the payment of tuition. It should be equally possible to secure medical services in Boston for Brookline children on a somewhat similar basis. Whatever plan is adopted, action should be taken without delay. Clinical care for children who need it is too important to rest on chance.

School Feeding.

Brookline has for many years followed the one-session plan of organization; that is classes open at half-past eight in the morning and are continued until 12.30, 1.00, or 1.30. A little after the middle of the morning a half-hour recess is allowed during which time children who live near the school run home to get something to eat, while others either carry food with them or buy it from local stores. Frequently children prefer to use the half-hour period as play time and go without any food. It is strongly the opinion of the Surveyor that if the one-session plan is continued provision should be made to insure all children's having a light lunch in the middle of the morning period.

During the recess period children can be seen racing madly through the streets in an effort to reach their homes, get something to eat, and return again before the recess period is ended. There is not time enough for most of them to eat slowly. Sometimes they carry pieces of food in their hands and gulp them down while they run. Many children, especially in the poorer districts, are given money by their parents to buy doughnuts, cake, pickles, and licorice sticks to satisfy their mid-morning hunger. When it is remembered that most of these children have breakfast about half-past seven and do not reach home again until almost two o'clock, the necessity of seeing to it that they have something more than a hasty bite in the middle of the morning becomes very clear. Most of the teachers bring their own lunches to eat at this time, but there is no supervision of what happens to the children.

Lunch is, however, served both at the high school and at the Practical Arts building. At the high school it is in the hands of a caterer who is given the privilege of using the high school building and equipment, but furnishes other supplies. The Surveyor lunched several times at the high school. Food is served in very small helpings and is frequently more expensive than it would be outside at an ordinary commercial establishment. For example, sandwiches made of a very thin slice of bread cut in half and sparsely covered with a thin coating of peanut butter sell for six cents apiece. Many children of the better class in the high school do not buy lunches because they feel that they cannot afford what seems to them an excessive charge. Others of the high school students take their recess time to go over to the Practical Arts building and purchase their lunches there.

Lunch at the Practical Arts is prepared by students in the Domestic Science classes. It is the opinion of the Surveyor that the food is better cooked, more attractively served, and distinctly lower in price than that provided in the main high school building.

This report strongly urges that if Brookline is to continue with the one-session plan, she adopt a system of school lunches for both secondary and elementary schools, prepared at cost,

and sold in penny portions. She should not continue to place this responsibility upon individual parents. In the first place, there are many parents, even among the comfortably well-to-do, who neglect to provide suitable lunch for their children at the recess period. In the second place even where parents do make such provision most of them would gladly avail themselves of lunches served at the school if they could be assured that the food supplied there would be of good quality, properly prepared, and selected under the direction of a skilled dietitian.

The objection probably will be raised that school children do not have money to pay for lunches. The answer is that most of them already have it and are spending it on lunches which they buy outside of school. This is particularly true of children who come from poor families. If food is sold in the schools in penny portions, intelligently selected, and carefully displayed, children will gladly pay for it the money which they are now spending at the nearest candy store.

Every school child in Brookline should have the opportunity to buy during the recess at school at least one hot dish and one or several cold dishes. The lunch service should not be rented out and run for profit. It should be kept under the direction of the school authorities. At the head of the lunch service there should be a trained dietitian who understands the science of food values and has had experience in catering to the tastes of public school children. In a town as small as Brookline the school lunch probably cannot pay for itself, but receipts from the children should be made to cover costs of material.

Probably the most economical and efficient method of administration would be for Brookline to have one special kitchen, probably at the high school or Junior High School building, where all food for Brookline schools would be prepared. Distances are short enough in Brookline so that by a little careful planning foods could be carried from the central kitchen in an automobile to different parts of the school system. If food is properly packed in heat-retaining receptacles it can be kept hot for a sufficiently long period. This plan of the central kitchen means that only one cook need be hired instead of having a cook for every building.

It means that food will be better cooked, less material will be wasted, and there will be a uniformity of product which it is difficult to secure under the separate kitchen organization.

Public school lunches for elementary children are being adopted all over the country, even where schools are on the two-session plan. In Brookline, where one session is tenaciously adhered to, the necessity of providing properly cooked food for the mid-morning recess is too urgent to be longer neglected.

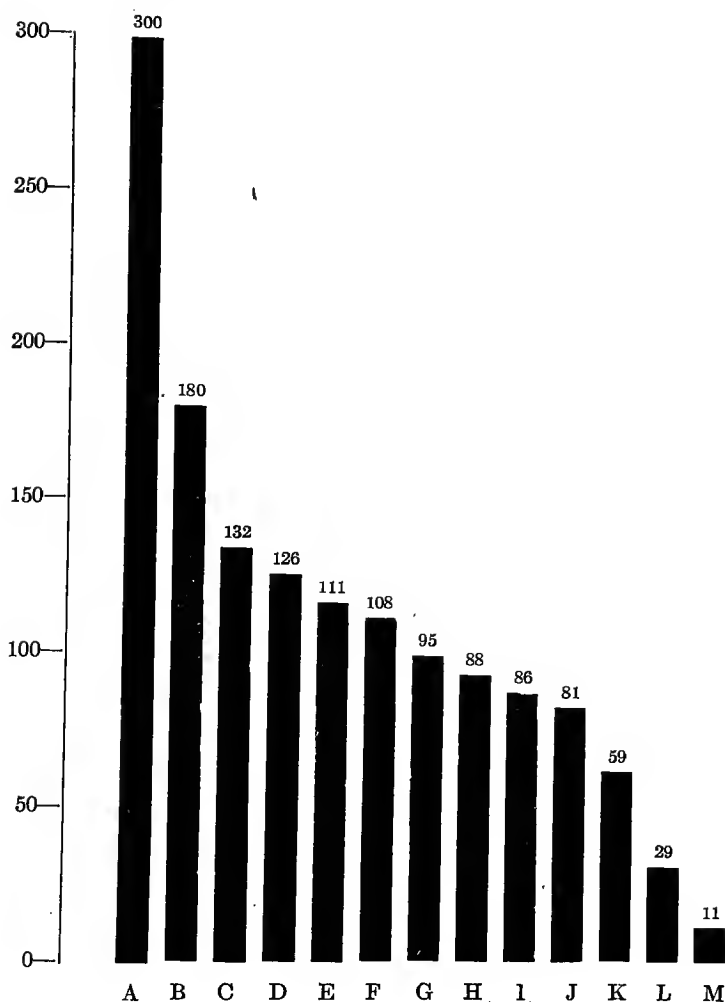
Costs.

It is very difficult to judge how wisely money is spent for medical inspection in Brookline. All the inspectors are paid one dollar an hour for their services. They make no report concerning the days of their visits or the work done, but at somewhat irregular intervals, usually a month or more apart, send in their bills. During the year 1915-16 members of the regular medical inspection staff spent from 59 to 300 hours each, carrying on medical inspection work in the schools. The amount of time spent ranges all the way between these two figures, with the medium or middle case at 108 hours.

The school nurse is paid \$1000 a year. It is impossible to tell with any certainty how many hours she gives during the year, but probably a fair estimate is seven hours a day for a school year of 200 school days, or about 1400 hours a year. One reason for the undoubted effectiveness of the nurse's work is that she is able to spend long periods of time without interruption on school service. The work of the doctors, on the other hand, is broken up into very small units.

The total cost of the Medical Inspection Department for the year 1915-16 was \$2759. In a study of 25 eastern cities, Dr. Rapeer finds that 1.1 per cent of the total school budget is spent for medical inspection; but Dr. Terman claims that this is usually too low. Were the sum reported by Dr. Rapeer spent in Brookline the yearly budget of the Medical Inspection Department would be a little over \$3000.

Dr. Terman believes that effective medical inspection work in any city cannot be done for less than 75 cents per child, and



HOURS SPENT DURING ONE YEAR IN THE MEDICAL INSPECTION OF SCHOOL CHILDREN BY EACH OF 13 PHYSICIANS
BROOKLINE, MASS., JULY 1, 1915—JUNE 31, 1916.

DIAGRAM XIV.

that small communities must be prepared to spend at least one dollar for the health supervision of every pupil. In Brookline the annual expenditure for each public school child is approximately 59 cents. Between \$700 and \$800 a year must be added to the present budget to meet the minimum figure suggested by Dr. Terman. The Terman figure is that recommended in the recent survey report on certain phases of the public school system in Boston. (Boston City Document 87; 1916.)

Brookline is a small community and in order to secure the same results she must be prepared to pay a somewhat greater amount per pupil than is necessary in larger cities. It is, therefore, essential that every step be taken to avoid waste and secure the greatest possible effectiveness for every dollar spent. There are three features of the present form of administration which should be changed in order to secure more economical use of funds:

1. There are too many people on the staff. For a school population of approximately 4500 there are 10 part-time public school physicians (including a woman physician at the high school), and one full-time nurse. Another physician has charge of the work at the parochial school. This means that there is one physician for approximately every 450 public school children, including those of high school age. Were it possible to avoid delays in handling pupils, recording examinations, and the like, one skillful physician on full time would be able to handle in an effective manner work which is now carried by the 10 part-time physicians.

2. The school population in Brookline is distributed among a number of small buildings. It is impossible to handle children so rapidly in small groups as when they are in large groups. Time is spent in going from school to school, and in making arrangements with different principals. Frequently the examinations at one school are finished before the end of the session, but there is not sufficient time to reach another school. The distribution of children in small groups widely separated involves constant delay which in turn makes it necessary to increase the number of workers in order to get the task of inspection finished.

3. The physicians employed are highly skilled, yet much of their time is spent in doing work which could be carried on as well by assistants. For example, the two visits a week to classrooms constitute a large portion of each physician's service, yet it is very rarely that at these visits a sick child is discovered and sent home. Classroom inspection by teachers or nurses would probably be just as effective as that now carried on by physicians and would free the latter for more needed work.

Again, much of the physical examination work could be turned over to nurses working under the direction of the physician. Just as teachers have proved themselves able to detect ordinary cases of defective vision, so the nurse who is properly directed can take height and weight, examine the condition of the hair, note posture defects, hypertrophied tonsils, and the like, and leave the physician free to handle cases requiring expert diagnosis.

Time may be saved, in the third place, by relieving the physician from all forms of clerical work. Whenever he makes a physical examination he should be assisted by a nurse and the latter should have charge of entering all findings upon the individual record card, and of sending out follow-up notices.

Concentration of the work in the hands of a few persons who devote their full time to it; centralization of school children in a few large schools instead of in many small ones; and the assignment of routine tasks to assistants, so that expensive workers are reserved for the most important problems, are among the steps which must be taken in order to insure that every dollar Brookline spends will bear a dollar's worth of results.

CHAPTER VII.

KINDERGARTENS.

LIBERAL PROVISION FOR KINDERGARTENS.

The kindergarten has long been an integral part of the public school system of Brookline and most generous provision is made for its conduct and support. There are at present 10 kindergarten centers in a total of 11 schools containing primary grades. This extension of kindergarten privileges to all the children of all the people is characteristic of Brookline and in harmony with the enlightened policy that seeks to provide the best possible conditions for public education, whatever may be the necessary cost involved.

In all the kindergartens unusually generous provision has been made for the comfort and health of the pupils and, in the newer buildings, the rooms devoted to the kindergarten are models in matters of location, arrangement, floor space and lighting. The kindergarten located in the high school building is the only one that is laboring under a serious handicap in the way of inadequate and unsuitable quarters. Everywhere else the rooms are sunny and well ventilated and of a size sufficient for the accommodation of the number at present in attendance. Ample provision has been made for storing kindergarten apparatus and supplies, and the only handicap in evidence is a lack of special toilets and lavatories for the exclusive use of kindergarten pupils. In several of the kindergartens the large assembly room comprises two full-sized schoolrooms and is subdivided by a rolling partition that may be raised and lowered at will. These classrooms are so large that a space sufficient for the installation of toilets and lavatories could be partitioned off at the end of one of them without detriment to the plant, and the gain in convenience and in time saved to pupils by such an arrangement would more than compensate for the slight loss in classroom space. Except in the Driscoll

School, where the kindergarten toilet facilities are admirable, no special toilets have been provided for the exclusive use of kindergarten children, and they are obliged either to use the single toilet in the teachers' room, or to share the basement toilets in use by the grade pupils. This condition is not ideal and should be remedied, if possible.

The Brookline kindergarten rooms are very well kept and pictures and growing plants give to them a delightfully homelike atmosphere. Several of the kindergartens occupying these spacious and beautiful rooms have so small an average attendance that it is a question whether economy does not call for some adjustment of district lines that shall result in a more even balance in kindergarten enrollment. Where an adjustment of district lines is not practicable and the numbers are disproportionately small, kindergarten teachers should make every effort to fill up the ranks, that as many children as can be reached may enjoy the privileges afforded.

At the Driscoll School, where the total kindergarten enrollment is less than 40 and the average daily attendance during the winter months not more than 25, two rooms, each 33 feet by 24 feet, are devoted exclusively to kindergarten uses. As the grades above the kindergarten are somewhat congested, it is evident that in the near future one of the kindergarten rooms will be needed for primary school purposes. When this readjustment becomes necessary, the small storeroom across the hall from the kindergarten should be made a kindergarten classroom and the basement supply room equipped for the storage of the supplies thus displaced. In view of the fact that the natural growth of the district will make it necessary, in time, to restore to the kindergarten the room temporarily cut off from it, structural changes likely to detract from the beauty and effectiveness of the present kindergarten plant should be avoided.

ORGANIZATION AND TEACHING FORCE.

In no town in the country is the kindergarten organization more nearly ideal from the standpoint of the kindergartner herself than is the Brookline organization. In most of the kinder-

gartens there is a nurse or helper who aids the head kindergartner and assistant in the care of the children and in the handling of tables, chairs and gift and occupation materials. In addition to this staff of director, assistant and nurse, two or three students from a neighboring kindergarten training school are assigned to each kindergarten, and these young women are expected to render any assistance that may be required of them. There is evidence of a determined endeavor on the part of kindergartners to cultivate independence and initiative on the part of even the youngest pupils, but the well-intentioned aid given to children by school nurses and student observers frequently tends to defeat the efforts of the teachers to develop a spirit of self-help. The student helpers are in many ways very useful to the schools, but it requires constant watchfulness on the part of the teachers in charge to prevent them from giving children more help and attention than is good for them.

In all kindergartens except the one in the Pierce School, the single daily session extends from 9 A.M. to 12 M. In the Pierce School the session is from 8.30 A.M. to 11.30 A.M. If the time of opening in all the kindergartens was fixed at 8.30, something would be gained. With the grade schools opening as they do at 8.30, kindergarten children who must be sent to school in the care of their older brothers and sisters are obliged to wait about in the halls or kindergarten rooms until nine o'clock before their school day begins. Such children are tired by the time the kindergarten session opens, and it would be much better for them if the kindergarten began at the same time as the primary schools.

PROGRAM AND METHODS OF INSTRUCTION.

What is known as the Boston kindergarten program is in operation throughout the system and the work is of the well-known traditional type. Some of the teachers are more liberal in spirit and practice than others, but there are fewer evidences of independent investigation and initiative on the part of teachers than should characterize the work of a town that is untrammelled by many of the limiting conditions that obtain in cities, and that affords to its teachers a wide freedom for experimentation.

This may be due, in part, to the fact that the Brookline kindergartners hold no regular teachers' meetings or program meetings of their own, but have, for years, attended the Boston program meetings. While occasional attendance upon these Boston meetings must prove helpful to any force of teachers, the value of long-continued attendance by a given group of town teachers upon a single series of city program meetings is open to question. Especially is this the case when the meetings are planned with particular reference to the needs of a large city and of the many young teachers who are each year added to the teaching corps. A small, carefully selected force of teachers, subject from year to year to very few changes in personnel, may profitably carry out a much more progressive and flexible program than any large city is likely to deem it practicable to outline. The kindergartens of Brookline should bear the Brookline stamp, and the programs should be worked out by the teachers in conference or by a supervisor in touch with the local situation and possessed of a knowledge of the aims and standards of the entire school system.

In most of the kindergartens the games and plays give evidence of a thoughtful effort to include the many rather than the few in all play activities. Games that were originally designed for use with very small groups have been modified or supplanted by games in which a majority or all of a large group may actively participate. This is in line with the best modern practice.

The kindergartens are equipped with the most approved modern appliances in the way of enlarged gifts and occupations. It is evident, however, that there has been practically no adaptation of method to the newer type of materials and that the teachers have made no independent study of the possibilities of the enlarged building blocks. In some of the kindergartens the enlarged gifts are used for building on the tables exactly as the one-inch gift material was used before the larger blocks were available. In other kindergartens the children use the enlarged gifts in building upon the floor. As it is at present conducted, this work on the floor is more restricted than it should be and allows for very little more bodily freedom than the table work. Children sit still on the floor instead of in their chairs and there is more building to

dictation and less opportunity for free building and community building than is provided by the more progressive of the modern kindergartens. In all the work with the building gifts so much time is consumed in stacking and boxing the blocks that children have no opportunity to enjoy and to play with the product of their handiwork. They are constantly building up, only to tear down immediately. Where the floor space will admit of it, buildings should frequently be left standing long enough to permit the builders to enjoy them throughout a free play period.

The enlarged weaving mats are being used to a greater or less extent in all the kindergartens. Some kindergartens do considerable weaving and some do but little. Experience with weaving as an occupation for third and fourth-grade pupils has led many thoughtful teachers to question its value as a kindergarten occupation. Even the simplest form of mat weaving is open to objection now that weaving has been introduced into the grades beyond the kindergarten. Sewing also is open to serious question and should have no place in a kindergarten program.

SPIRIT AND PROFESSIONAL ATTITUDE.

The teachers in the Brookline kindergartens are cultivated, well-educated women, who are skillful and sympathetic in their management of children. Difficult cases are handled with much gentleness and firmness, and all the teachers evidence a constant concern for the happiness and welfare of their pupils. There is a spirit of hearty co-operation between teachers and children and there is evident on the part of each teacher an intense loyalty toward her particular kindergarten family. The teachers in one kindergarten know very little, however, about what is being done in the other kindergartens in the town, as they seldom meet for conference and each director is a law unto herself in matters pertaining to program making, methods of instruction and the fixing of ends to be achieved. If there were frequent meetings of the entire kindergarten force and if kindergartners and primary teachers were in closer touch with one another and more intelligent regarding one another's aims and accomplishments, this freedom of the individual teacher might be made to serve the

highest interests of both kindergarten and grade schools instead of tending toward an undesirable isolation.

In a public school system there is little room for an individualism that is not broadly co-operative. Each department of the school needs all that every other department has to contribute to it. Education cannot be cut off into lengths and each length pigeonholed in its own department. Kindergarten teachers and grade teachers in Brookline, as elsewhere, need to get together. They need to see one another teach, to compare notes with one another, to engage in friendly debates, and to demand from one another proofs of achievement. Nothing that a teacher may plan to do to improve herself can be depended upon to take the place of frequent conferences with her coworkers in the field of education.

There can be no question that a closer relationship between the various kindergartens in Brookline, and between the kindergarten and the grades, would tend definitely to increase the efficiency of both the kindergartens and the elementary schools.

CHAPTER VIII.

THE COMMON BRANCHES.

HISTORY.

The requirements of the curriculum in History are as follows:

Grades IV-V: (1) Reading "Ten Boys who Lived on the Road from Long Ago to Now," or similar book; (2) reading stories from American history; (3) reading lives of persons famous in American history.

Grade VI: The reading of an elementary history of the United States.

Grade VII: The study of American history to end of the Revolution, with incidental attention to such parts of European history as are connected with American history.

Grade VIII: The study of United States history completed; incidental attention to European history as directed in Grade VII; the civil government of the United States, of Massachusetts and of Brookline.

Grade IX: The history of England.

Along with these requirements are some helpful suggestions to the teachers, which include the following: In Grades IV-V, oral and written reproductions of most interesting portions read; in Grade VI, no *lessons* in History to be assigned, but reproductions to be called for as in Grades IV and V; in Grade VII, teachers are cautioned against giving too much time to the period of discoveries and explorations; in studying the colonial period, special attention should be given to the history of Massachusetts, New York, Pennsylvania and Virginia; lessons should be assigned, learned and recited in accordance with a topical outline prepared by the teacher.

All these suggestions are worth while because they help the teacher to make an intelligent use of the Course of Study, not only in the material she selects and emphasizes, but in her method of

handling such material. These suggestions, few as they are, must result in better teaching than would be likely if they were not made. But there are not enough of them. Even if all the teachers of History were experts in that field of study, they should understand, with more definiteness, the material which they are to emphasize and something of the spirit and method which they are to apply to its use and interpretation. But of course only a small percentage of the teachers in the elementary schools of Brookline or anywhere else are special students of history or have even an extended knowledge of the subject.

It is, therefore, of the first importance that at least minimum requirements of a definite nature should be made in all the grades where History is taught. The teacher has a right to know, in the interests of the better teaching of her pupils, what "stories from American history" are worth teaching, what "lives of persons famous in American history" should be chosen, and what events should be selected to typify the great man's life and work. In these grades, IV and V, it is quality rather than quantity that must prove effective. What does the special story teach about life that we wish the pupil to learn in the interpretation of his own as it is related to other human lives? What special achievement characterized the life and work of the chosen leader, hero, or patriot? And the selection of material, of course, is of the first importance in Grades VI to IX also. In all these grades representative men and typical events should receive emphasis and, to insure this, definite recommendations and suggestions should be made so that the teachers may know what is expected of them.

Such a Course of Study is planned in Brookline for Geography and Arithmetic, and it is just as much needed, and for the same reasons, in History. Nor does it hamper the teacher's individuality and freedom in the one case any more than in the others.

As was to be expected with such an indefinite Course of Study, the Survey Staff found some of the teachers putting undue emphasis upon insignificant topics. They were wasting time upon facts and events having little educational value. In some classes there was not enough made of the ethical amplifications of the facts studied. The teachers, in such cases, did not seem to realize that

they were interpreters, for their pupils, of the lives of men who now live only in what they said and did — that through the study and knowledge of such men the pupil is to come to understand his own life as it is related to the lives of other human beings.

But much of the teaching observed was of a high order of excellence, so far as the handling of the material goes. Many of the teachers — and this was especially noteworthy in the work in English history in the ninth grade — had the material well in hand, laid emphasis upon what was worth while. They also insisted upon clear and definite knowledge on the part of their pupils. The pupils had been required to make careful preparation of the lesson and they recited with considerable freedom and in unusually good English. In fact, they evidently knew that none but good language would be accepted. Moreover, almost invariably in discussing events having a geographical significance the wall map was used. This feature of the work is to be highly commended.

There was often a special effort to make the pupils think by encouraging them to criticize and question each other. This, in some cases, was well done, but in others the questions and answers moved slowly, and much time was consumed upon rather unimportant and sometimes trivial things. Still, the method, skillfully used, is of value, because it helps to prevent the recitation from falling into a dull routine. Of this, we are glad to say, but a little was seen in any school. A large proportion of the recitations were characterized by spontaneity on the part of both teacher and pupils, and in almost every case there was a fine responsive spirit in the schoolroom. The children were evidently contented and happy.

The History teaching which was observed in the high school was good, some of it remarkably good. It was evident that the teachers had set a high standard of effective work and that the larger part of the students were trying to reach this standard. The pupils were not weighed down with excessive note-taking, but were taking notes in an intelligent and purposeful way. As an example of this, a pupil would recite on some special topic which had been assigned to him and for which he alone was held respon-

sible. During the recitation period he stood, unaided, before the class and told, in his own way, the results of his investigation and the books from which he had obtained his facts. While he was talking the rest of the class took notes and, when he had finished, his classmates closely questioned him on points made in his report. Such questions naturally led to more or less debating, in which many boys and girls gave evidence of clear thinking and intelligent interest. The notes which the pupils took were to be handed in later. The subject matter assigned to the entire class for the recitation was discussed in an informal but thorough and vital way. This work was far removed from formal, cut-and-dried routine. It was stimulating, and it involved as good thinking as work in science or mathematics demands.

What has just been said as to method, in both the elementary grades and the high school, indicates that, on the whole, the teaching that came under observation was unusually good, so far as the handling of the material selected was concerned.

The chief need to be pointed out is a more detailed and definite Course of Study. This might to advantage be worked out in conferences by the teachers themselves. Meanwhile the course outlined by the Committee of Eight of the American Historical Association might be supplied at small expense.

REPORT ON THE RESULTS OF STANDARD TESTS IN THE GRAMMAR SCHOOLS OF BROOKLINE.

Purpose of the Report.

The purpose of this report is to present and interpret the results obtained from a series of standard tests which were given in the several grammar schools of the town. The report will concern itself for the most part with a comparison of these results with those obtained in other schools and school systems. This, however, is by no means the only use to which the results may be put, and other facts of interest which they have shown will be presented from time to time.

Limited Scope of the Report.

A word of caution is perhaps necessary to the reader. We have not come in our work with the standard tests to the point

where we can say definitely what we should expect the average child in any grade to do with them. Results obtained in some places have been unquestionably too low, showing an inadequate training in some of the subjects. But in other schools it has seemed likely that the results obtained were too high, indicating an over-emphasis on the formal side of school work. In other words, while we have succeeded in some measure in standardizing the tests, we have not yet standardized accomplishment in them, and we are still gathering data for this purpose. To this end the Brookline results will be contributory.

There is another limitation to the scope of this report. It can only determine and present the attainments of the pupils who are actually present in the schools. It may be that some of the classes are recruited from a school population which is inferior, in which case it would be unfair to hold a school entirely responsible for the work of the pupils. It is also possible that there may be by chance in some of the grades a relatively superior or a relatively inferior group. These facts could be determined by supplementary mental testing, but such investigations are beyond the scope of the present report. It may be said that with the large number of pupils in the Brookline schools it is not probable that any of the above possibilities have a serious effect on the results.

Giving of the Tests.

All the testing was done between the fourth and the thirteenth of December, 1916. The schools had opened later than usual, and had been in session only about a month when the tests were given, so that the attainments of the pupils were probably approximately what they had been at the close of the previous year.* Because of this each grade was set back a year; that is, the results of the ninth grade were considered as of the eighth grade, and so on.

*A previous study by the same investigators brought out the fact that there is little difference in the attainments of pupils as a group at the end of one year and the attainments of the same pupils as a group at the beginning of the next fall term. This was not only found to be the case in the class averages, but there was also a high correlation between the attainments of the individual pupils in the two sets of tests.

Most of the tests were given by two investigators well trained in the work. The only exception to this rule was that the teachers gave the Spelling, each in her own grade. In general, the use of a small number of testers is a thing to be desired, as it makes for greater uniformity.

The testing was so arranged as to guard against all possible effects of fatigue. No grade was given all of its tests on the same day, and in nearly every case at least an hour was allowed to elapse between two testing periods. The two Arithmetic tests were given on different days.

Because such studies as these must necessarily upset the even tenor of the school, it is true in some cases that the pupils cannot do themselves justice in the tests. Every effort was made to guard against this in the Brookline schools, and it is believed that the attitude of the pupils toward the tests was not much different from their attitude toward tests given by their own teachers. The hearty co-operation of the teachers helped greatly in this respect.

Tests Used.

The tests given in this Survey were only such as have become recognized standards; that is, they were such tests as have been worked out in some detail, and such as have been used in previous investigations of a like nature. This latter criterion is especially desirable in order that there may be figures for comparison.

A list of the tests is given below. They will be described in detail later in the report.

Tests Used in the Brookline Survey.

1. Arithmetic Tests:

- (a) Courtis tests in the four fundamental operations.
- (b) Stone reasoning test.

2. Spelling Tests:

- (a) Words from Ayers' lists.
- (b) Words from Boston lists.

3. Penmanship Tests:
 - (a) Holmes test for speed of handwriting.
 - (b) Holmes test for quality of handwriting.
4. Reading Tests:
 - (a) Holmes test for speed of silent reading.
 - (b) Holmes test for quality of reproduction.
5. Composition Test:

Compositions rated on the Harvard-Newton scale.

Correction of Papers.

The correction of the Arithmetic, Spelling, and the speed of silent Reading was done by the teachers, each of whom corrected the papers from her own room. The Reproduction, Penmanship, and Composition tests are of such nature that they can be more efficiently and economically corrected by those who have had considerable training in the work. This method was therefore, adopted.

Presentation of Results.

The results of this study are presented in two different ways. In the body of the report there are tables showing the Brookline results, together with those obtained in other school systems. These results, with the exception of those from the Spelling tests, are expressed in terms of the median* rather than in terms of the average scores. This is partly because the median is much more easily found than the average, and partly because the results with which it is desired to compare those of Brookline are also given in terms of medians.

In the appendix there is a much more detailed presentation of the results, which includes the average or median scores of the separate schools and rooms, together with their variations. A wealth of material was secured in the testing, and it seemed to

*The median is simply the middle score when all are arranged in order of their magnitude. If the series contains an even number of items the median is the same score as it would be if one more item were added to the upper end of the series. Thus, of the series 4, 5, 7, 9, 10, 11 and 15, the median is 9. Of the series 10, 11, 12, 15, 18 and 21, the median is 15.

be advisable to present it in this manner for the further study of any who might be interested.

Number of Pupils Tested.

The number of pupils tested must be considered, because the reliability of any average or median is dependent in part upon the number of items which enter into it. That is, an average based on 100 items is more reliable than one based on 50 items. The technical reason for this need not be considered here.

In Brookline the grades are all large enough so that the reliability of the averages and medians need not be questioned on account of the numbers. The central tendencies of the combined grades based on 250 to 300 items are undoubtedly reliable on this score.

Ages of Pupils Tested.

Another important consideration is the ages of the pupils taking the tests. For absolutely fair comparison the median ages of the pupils of any systems or schools compared should be the same. If a grade is composed of older pupils it is likely to be a relatively inferior grade, and, conversely, it is likely to be relatively superior if it is composed of younger pupils.

The Brookline schools as a whole seem to be composed of pupils of the *same ages*, as are the schools with which they are compared, as far as it is possible to obtain data in regard to the latter. There are two notable exceptions, however, for the pupils of the Heath and Lincoln Schools are, from the fifth grade on, a year older than the pupils of the other schools. There is also one ninth grade in the Devotion School in which the pupils are a year younger than the rest. These facts should be taken into consideration when inter-school or inter-room comparisons are made.

It is interesting to note that when all the grades are combined the age medians progress regularly, starting at 10 years in the fourth grade, and reaching 14 years in the eighth. On this basis it may be assumed that the age of entering the first grade is approximately six years.

RESULTS IN ARITHMETIC TESTS.

(a) Courtis Tests in the Four Fundamental Operations.

The examples used in this test were the same as those used in the Des Moines, Ia., survey, which are no different in principle from the standard Courtis Tests, Series B.

The test is carried out by giving each child a folder which contains 24 examples for each operation: addition, subtraction, multiplication, and division. There is a definite time allotment for each set. At a signal by the tester all the children begin to work simultaneously on the first set, and they continue until time is called. Then the same method of procedure is used for each of the other sets in turn.

In correcting the papers, the number of examples done by each child is counted, and also the number that each has done correctly. From these figures it is possible to get both the speed and the per cent of accuracy of the arithmetical work.

The following tables show the Brookline results in comparison with the latest standards published by Mr. Courtis. These standards were obtained by giving the tests to several thousands of pupils in many different schools and school systems all over the country.

TABLE NO. 1.

SPEED OF ADDITION IN COURTIS TESTS.

	<i>Grade IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools (examples done)		8	8	..
Courtis Standards (examples done) . . 6		8	10	11

As the table shows, the Brookline median equals the standard in the fifth grade, but no advance is made in the sixth grade, and so this median falls a grade behind the standard.

The same condition is found in the different schools, and the Heath School is the only one to equal or surpass the standards in both grades. In the Lawrence School the situation is peculiar, for the fifth-grade median equals the sixth-grade standard, while the sixth-grade median is only equal to the fifth-grade standard.

There is a fairly wide divergence between the attainments in the different schools, for the medians in each grade range from

seven to 10. There is also some divergence in many cases where there are two sections of one grade in the same school. This latter may be due to the fact that the pupils are put in sections *according to their abilities*.

A study of the distributions of the individual scores and of the variations of the medians shows that, for the most part, the pupils are not grouped very closely in their abilities to do this test.

TABLE NO. 2.

ACCURACY OF ADDITION IN COURTIS TESTS.

	<i>Grade - IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools.		62%	67%	....
Courtis standards.	64%	70	73	75%

The Brookline schools fall more than a grade behind in accuracy of addition.

The same condition is found among the different schools, although Lawrence and Driscoll slightly exceed the standard.

Again, there is a rather wide range of variation between the schools, as the medians range from 50 per cent to 71 per cent. The low figures mean that some schools and sections fall at least two grades behind.

TABLE NO. 3.

SPEED OF SUBTRACTION IN COURTIS TESTS.

	<i>Grade IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools (examples done).		8	9	..
Courtis standards (examples done).	7	9	11	12

In this test the Brookline schools fall half a grade behind in the fifth grade and a whole grade behind in the sixth.

In the fifth grade the Heath School is the only one which equals the standard, while all the other schools fall at least half a grade behind. In the sixth grade no school equals the standard median.

The variation between the different schools is not quite so large in this test, although it still amounts to as much as two examples.

TABLE NO. 4.

ACCURACY OF SUBTRACTION IN COURTIS TESTS.

	<i>Grade IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools.....		75%	80%	....
Courtis standards.....	80%	83	85	86%

As to accuracy of subtraction, Brookline falls about two grades below the standards in both grades.

The Runkle and Devotion Schools exceed the standards, but all other schools fall below them. This means that there is again considerable variation in the attainments of the pupils of the various schools.

It is rather an interesting fact that three of the schools, Heath, Lincoln and Runkle, show slightly greater accuracy in the fifth grade than in the sixth.

TABLE NO. 5.

SPEED OF MULTIPLICATION IN THE COURTIS TESTS.

	<i>Grade IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools (examples done)...	6	6	7	..
Courtis standards.....	6	8	9	10

Here again we find that Brookline is from a grade to a grade and a half behind the standards.

Among the various schools there is only one section that equals the standards.

Variation among the schools is less in this test, especially in the sixth grade, where the school medians differ by not more than one example done. This same fact holds true for the sections of the grades within the school in all cases except the Devotion fifth grade, where the difference is two examples.

TABLE NO. 6.

ACCURACY OF MULTIPLICATION IN COURTIS TESTS.

	<i>Grade IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools.....		67%	75%	....
Courtis standards.....	67%	75	78	80%

The table shows that Brookline schools are exactly a year behind the standards in both grades. It should be noted, however, that the fifth and sixth-grade standards are very close.

Among the different schools we find some which equal or surpass the standards. This is notably true in the Runkle School.

There is again wide divergence of attainment both between different schools and between different sections within the schools.

In three of the schools, Heath, Lincoln and Runkle, the fifth-grade median equals or surpasses the sixth.

TABLE NO. 7.

SPEED OF DIVISION IN COURTIS TESTS.

	<i>Grade IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools (examples done)		6	8	..
Courtis standards (examples done) . . 4		6	8	10

In speed of division the Brookline schools are exactly equal to the standard scores. Only three of the 20 different grades and sections fall below the standards, while eight grades and sections exceed them.

Variations in the medians amount to only one example in the sixth grade, but in the fifth grade a variation of two examples is common.

TABLE NO. 7.

ACCURACY OF DIVISION IN COURTIS TESTS.

	<i>Grade IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools . . . . .	....	80%	88%	....
Courtis standards	57%	77	87	90%

As the table indicates, Brookline schools are slightly above those from which the standards were obtained.

Among the various schools only the Pierce fifth grade is decidedly behind the standard. On the other hand, the Runkle School makes a remarkable record with a median of 100 per cent in both grades. This means that half of the pupils made perfect scores. The Lawrence sixth-grade median is also a grade ahead in this test.

Because of the high Runkle scores, the extreme variations between the schools are high, with a range of from 67 per cent to 100 per cent.

Summary.

Taken as a whole, the Brookline schools fail to reach the Courtis standards in either speed or accuracy of addition, subtraction and multiplication, while they exceed the standards slightly or equal them in division.

Among the various schools there is considerable variation in both speed and accuracy of work, and a like variation exists between sections of the same grades in the same schools. As has already been pointed out, this latter variation may be due to the fact that in some of the schools the sections are made up by separating the pupils according to their abilities.

There seems to be some slight relation between the speed and accuracy of the work. That is, the schools in which the pupils do, on the average, a larger number of examples seem to be those in which the percentage of accuracy is greater. The exact relation could be determined by a correlation study.

(b) Stone Reasoning Test.

This test consists of a set of twelve problems of graduated difficulty. The pupils are given a folder containing these problems, and exactly fifteen minutes is allowed them in which they work as many of the problems as they can.

In correcting the papers the pupils are credited with a certain problem value for each right answer. These problem values have been determined and assigned by Dr. Stone, and they vary from 1.0 to 2.0 according to the difficulty of the problem. A pupil's score is found by adding all the credits he has received.

The following table shows the median scores of the Brookline schools in comparison with scores obtained in a number of systems:

TABLE NO. 8.

STONE REASONING TEST.

	<i>Grade</i>	<i>V</i>	<i>VI</i>	<i>VII</i>
Brookline schools.....		4.0	6.2	...
Starch standards.....		7.8	9.4	11.0
Butte, Mont.		2.2	3.9	5.8
Laporte, Ind.....		3.4	4.6	8.1
Salt Lake City.....		3.7	6.4	8.6
Boston, 1916.....		...	4.0	6.4

The table shows that the record of the Brookline schools is appreciably better than most of the standards. In some cases the Brookline medians are more than a grade ahead. The Starch standards are the only ones that are above the Brookline median.

As in the Curtis tests, there is considerable variation in the results from the different schools, and in the results from the different sections in the same school.

Another problem in variation arises here. The median variations in some of the schools and sections are so great as to affect rather seriously the reliability of the medians. Just how great this effect is it is impossible to say. It may be noted, however, that the higher scores are, for the most part, more reliable than the lower ones.

The Devotion and Runkle Schools have the highest scores, and the Lawrence School ranks close behind the latter.

SPELLING TESTS.

The Spelling tests consisted of 20 words from the Ayers spelling scale and 10 words from the Boston spelling lists. These words were pronounced both singly and in sentences by each teacher in her own room.

An extra grade was taken in these tests, so that scores are presented from the fourth grade as well as the later grades.

Comparisons are made in terms of per cents this time, as it is on this basis that the standards are expressed.

TABLE NO. 9.

A. WORDS FROM THE AYERS SCALE.

<i>Grade</i>	<i>IV</i>	<i>V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>
Brookline.....	84%	87%	89%	90%	86%
Ayers standard.....	79	79	79	79	79
Missouri Tr. schools.....	64	78	74	73	77

B. WORDS FROM THE BOSTON LISTS.

Brookline.....	61%	69%	84%	66%	80%
Missouri Tr. schools.....	42	58	55	45	57

In Spelling, the Brookline schools are decidedly above the standards. This is not only true of the schools as a whole, but in the different schools and sections as well, for only two or three sections out of 50 fail to surpass the Ayers standards.

The work with the Boston words is not so good, but this was to be expected because the words are harder and not so familiar to the pupils. The Boston scores with these words run from 86 to 95 per cent, but this is only after the words have been studied for one or two lessons. Considering this fact, the Brookline record is very satisfactory.

There is not so much variation in the Spelling as in the Arithmetic tests, as none of the schools, with the possible exception of the Devotion, made a record that was uniformly better than the rest.

PENMANSHIP TESTS.

The Holmes test for speed and quality of writing was used in this investigation. In this test a short sentence involving all the usual letter combinations, but made up of familiar words, is written repeatedly for a one-minute and a four-minute period. The sentence is practically learned by each child before the writing begins, so that little time is lost because of forgotten copy.

The pupil's speed of writing is obtained by finding the average number of letters per minute he writes in the two periods.

TABLE NO. 10.

SPEED OF WRITING.

	Grade V	VI	VII	VIII
Brookline schools.....	76	87	90	98
Newton, Mass.....	73	85	94	102
Missouri Tr. schools.....	80	92	92	102

These scores are in letters per minute.

In this test the Brookline medians are very close to those which have been chosen for comparison. It may be that there is a tendency to fall behind in the two upper grades but, if so, it is very slight.

As in most of the other tests, there is considerable variation in the medians of the various schools. These range from 12 letters per minute in the fifth grade to 29 letters per minute in the eighth.

The quality of writing was determined by rating three samples of each pupil's writing by means of the Ayers handwriting scale. These samples were, first, the writing that the pupils had done in the four-minute speed test; second, the copy of a short story written by the pupils from dictation; and third, the "reproduction" paper from the reading test. In the latter case the pupils were not told that the paper was to be graded for penmanship.

In correcting the papers, each was rated independently by two examiners, and the two ratings were averaged for the score of the paper. For the final quality mark the average of the scores of the three different papers was calculated.

TABLE NO. 11.

QUALITY OF WRITING.

	Grade V	VI	VII	VIII
Brookline schools.....	44 9.4	46 9.7	47 9.9	49 10.0
Newton, Mass.....	48 9.9	51 10.2	50 10.1	53 10.5
Missouri Tr. schools.....	41	42	45	47
Cleveland, O.*.....	45	48	50	55
Starch standards*.....	43	47	53	57
South Bend standards*.....	50 10.1	50 10.1	60 11.2	60 11.2

*The test given this test was not the Holmes test, but the rating was done on the Ayers scale. The scores in the table express quality of writing in terms of the Ayers scale.

In quality of writing Brookline does not fare so well as in speed, as the table shows that the medians are below the standards in most cases. In the two upper grades the Brookline scores fall at least a grade behind.

It is a rather interesting fact that the differences between the scores of the various schools are in many instances greater than the differences between the medians of successive grades. This again shows wide variations between the schools.

There is, in spite of this wide variation, no one school in which the writing seems to be consistently better or poorer than in the others.

In the work of correcting the papers it soon became very evident that the quality of the writing varied quite decidedly in the different tests. To show this, the following table was made out:

TABLE NO. 12.

QUALITY OF WRITING IN DIFFERENT TESTS.

	<i>Grade V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>
Speed test.....	40	43	45	45
Reproduction test.....	43	45	45	48
Dictation test.....	48	50	50	53
Average.....	44	46	47	49

This table shows that the quality of writing in the dictation test was markedly better in every grade. The indication seems to be that the pupils do not write as well when their attention is not particularly fixed on the quality of their writing. It is likely that the scores on the reproduction test are of the most importance because these show the quality of the pupils' ordinary writing.

HOLMES READING TEST.

A short story built around 35 ideas is the basis of the Holmes test. A printed slip is given the pupils, and they are allowed to read as much as possible in a limited time. From this the number of words read per minute by each pupil is computed.

After this limited period the pupils are allowed to finish the story. Then the printed slip is taken away from them and they

are asked to write the story in their own words. Their papers are graded on the basis of the number of ideas reproduced.

Finally, a series of questions on the main points in the story is given, and the pupils are asked to write the answers. These papers are graded on a percentage basis according to values assigned to the various questions.

TABLE NO. 13.

SPEED OF SILENT READING.

	<i>Grade V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>
Brookline schools	249	283	309	294
Holmes standards	249	276	309	309

These scores are in words per minute.

The Holmes standards were obtained from the results of testing two or three thousand pupils in various parts of the country.

In this test the Brookline scores are very near the standards. They are somewhat above in the sixth grade, and a little below in the eighth. These differences, however, are not great enough to be of significance. The drop in the eighth grade is largely due to the low scores in one school.

The variations in the various medians are very great. In every grade the variations are greater than between the successive grades.

In some of the grades where the medians are high, a study of the distributions shows that the individual scores do not cluster closely around some central point, but are very widely spread out.

TABLE NO. 14.

QUALITY OF REPRODUCTION OF PASSAGE READ.

	<i>Grade V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>
Brookline schools	57%	57%	57%	60%
Holmes standards	54	54	60	60

In the fifth and sixth grades the Brookline scores are a shade better than the standards, but this advantage is lost in the seventh

and eighth grades. The differences are not great in any grade, however.

Differences between schools and sections are again large and frequent.

The Pearson coefficient of correlation between the speed of reading and the quality of the reproduction of the passage read is, in the eighth grade, $-.05$. This means that there is practically no relation between the speed of reading and the ability to reproduce what is read. Looking at it in another light, it means that a high or a low score in one test is no criterion by which to estimate the score of the same individual in the other. This finding is contrary to the general belief concerning this matter.

TABLE NO. 15.

ANSWERS TO QUESTIONS ON PASSAGE READ.

	<i>Grade V</i>	<i>VI</i>	<i>VII</i>	<i>VIII</i>
Brookline schools.....	62%	64%	68%	73%
Holmes standards.....	63	69	72	73

The scores of the schools as a whole are slightly below the standards.

Variations are present as in all of the other tests, and some few of these run as high as 15 per cent.

COMPOSITION TEST.

In carrying out this test the pupils were simply asked to write a composition on any one of three assigned topics. These topics were such that the pupil had a wide range for choice, while the product was kept fairly uniform.

TABLE NO. 16.

COMPOSITION MEDIANS.

	<i>Grade VI</i>	<i>VII</i>	<i>VIII</i>
Brookline schools.....	61	..	70
Newton, Mass.....	..	75	75
Bloomington, Ind.....	..	61	67
Port Townsend, Wash.....	..	53 ✓	58

Medians are expressed in terms of the Harvard-Newton composition scale.

In comparison with the standards, the Brookline scores in this test are good. They are not quite up to the Newton scores upon which the scale is based, but the difference is not great. It is noticeable that the Brookline sixth-grade score is a grade ahead of some of the others.

There is as little uniformity in composition writing as in any of the other subjects, and the range of variation is especially large in the sixth grade.

In both grades scores of the Heath School are especially high, while those of the Lincoln are consistently low.

CHAPTER IX.

THE SPECIAL BRANCHES.

DRAWING AND HANDWORK IN THE PRIMARY GRADES.

The fact that in the Course of Studies Drawing and Handwork are outlined together gives recognition of the close relation existing between these two subjects. In the first four grades, their subject matter and thought content have much in common. When the children make illustrative drawings of Indian life, it is suggested that they construct an Indian camp. In general practice much instruction in Drawing may be related to other subjects than Handwork, and Handwork may be related to Arithmetic, Reading, History, Geography, Nature Study, as well as to Drawing. But on the other hand, certain parts of Drawing and Handwork may be taught to advantage without relation to other subjects.

Drawing, as outlined in the Course of Study, suggests contacts with a rich fund of educative material. The work as observed in the schools seems to be well balanced as a means of expression, for appreciation of fine things in art, and for such applications as children can make. Greater possibilities, however, might be realized in correlating Drawing with other subjects in the curriculum. There is evidence of a desire on the part of the Drawing teacher to establish relations between Handwork, Nature Study, History and Reading, but there is a lack of such supervision as would be necessary for more complete realization of possibilities in this direction. There seems to be no supervision of the primary Handwork. Some help is given by the Drawing teacher, but as she is directing the Drawing of nine grades, she can do little for the Handwork. As the Manual Training teachers have full-time schedules in teaching Bench Work to the upper grades, they can render little assistance to the primary teachers. Furthermore, the help of Bench Work

teachers without special training for supervision of primary handwork, would be inefficient.

Then, too, the outline provides for Handwork in a very narrow range of materials. Paper and a limited amount of clay or plastiline are practically the only materials suggested for Handwork in the first three grades. In the fourth grade, cardboard construction for boys and needlework for girls is provided. Unquestionably some ideas in construction can be taught with paper and some experiences in its manipulations have value. But, one hour a week for three years devoted so largely to work in paper can hardly be justified. With much greater profit there could be taught many vital educative facts concerning the life of the child, such as the clothes he wears, the house in which he lives, the traffic on the street, and the food he eats. These educative facts suggest a great variety of materials. With this wider range of materials and thought content, greater powers for creation and expression would be developed, more significant facts would be taught, many opportunities for relating school work to actual things in the child's life would occur, and greater interest would be secured. To enable the primary teachers to do this work successfully supervision would be necessary. Observations in the schools indicate that even the limited possibilities suggested in the outlines are not generally carried out. In one or two schools, however, some special work is being developed experimentally.

The needs for supervision for both Drawing and Handwork in the primary grades might be met by the appointment of one person as a primary Drawing and Handwork assistant who would represent both departments in working with the primary teachers. The school manual lists 46 classes of grades one to four inclusive, and seven other primary classes that do not receive instruction from a Manual Training teacher, making a total of 53 classes that could be adequately assisted by a properly trained supervisor.

DRAWING IN THE GRAMMAR GRADES.

The Drawing in the grammar grades, as in the primary grades, shows the same broad aims for applying the instruction to the living conditions of the pupils, giving appreciation of fine

things in art and for increasing ability to use Drawing as a means of expression. The results of the work attempted compare favorably with those of other school systems. Frequent instances were found where the Drawing was related to the general academic studies. Pupils who continue Drawing in the high school give evidence of previous training in the grades.

Considerable limitation results, however, from the fact that practically all of the Drawing is expressed on paper. There seems to be no correlation between the Drawing on the one hand, and Manual Training, Sewing and Domestic Science on the other. If problems in design for such various activities as household decoration, printing, metal work, wood work, and cement could be worked out with the teacher of Drawing, and then applied in the activities, the function of Drawing would be considerably broadened. At present, all of the Drawing in primary and grammar grades is directed by one teacher without the help of assistants. Under a departmental organization the upper grade Drawing could be taught to better advantage and without added expense by a special teacher. If a Junior High School is organized, a properly equipped studio and special teacher will be available. The need for a supervisor of Drawing in the primary grades should be considered in connection with the problem of directing the grammar school Drawing.

DOMESTIC SCIENCE AND DOMESTIC ART IN THE GRAMMAR SCHOOLS.

Domestic Science as taught in the grammar schools of Brookline is quite typical of what is usually done in this line of work. It is taught on the laboratory basis. In some of the schools there is an attempt to adjust the course to the needs of the girls by emphasizing the preparation of plain foods, and by giving occasional experience in serving a simple meal. In one or two places, housekeeping lessons are given by using a limited dining room and bedroom equipment. Within the limitations of the laboratory type of instruction, the instances cited above are commendable as an attempt to meet the home needs of the girls so far as conditions permit.

The Sewing is of the type that is common in most city school systems. From the beginning emphasis is put on neatness and painstaking care in the processes. There is a tendency to make the work somewhat formal. As with the Cooking, there is an attempt to adjust the work to the needs of the different groups of girls.

It would be possible to develop far more practical work in Domestic Science and Domestic Art if the upper grammar school grades were brought to one center. A model suite of rooms would be available. Lunch requirements would offer many opportunities for practical cooking. A recognized center for the production of girls' work would be developed as, for example, simple millinery and garment making. The opportunities given to the girls at the present vary in the different schools. All girls in one school do not have the same needs. A central school or Junior High School would make it possible to give each girl the kind of work and the amount of work that would be of advantage to her.

MANUAL TRAINING IN GRADES V TO IX.

A study of the Manual Training in Brookline presents several varying factors. The time allotted to certain grades is not the same in each school. In the Lincoln School a man instructs the boys in shop work. In other schools, Manual Training instruction is given by women. Each teacher has a different Course of Study. An equipment of wood-turning lathes is provided for the eighth and ninth grades in the Lincoln School. The lack of uniformity in the amount of time devoted to Manual Training in the different schools and in the distribution of time to the various grades is indicated by the following table.

GRADES TO WHICH MANUAL TRAINING IS TAUGHT AND THE ALLOTMENT OF TIME FOR IT IN THE SIX SCHOOLS

	<i>Lincoln</i>	<i>Pierce</i>	<i>Heath</i>	<i>Runkle</i>	<i>Devotion</i>	<i>Lawrence</i>
V	1 hour	.....	$\frac{3}{4}$ hour	.....	.....	.....
VI	$1\frac{1}{2}$ hours	$1\frac{3}{4}$ hours	$1\frac{1}{3}$ hours	$1\frac{3}{4}$ hours	$1\frac{3}{4}$ hours*	$1\frac{3}{4}$ hours
VII	$1\frac{1}{2}$ hours	$1\frac{3}{4}$ hours	$1\frac{1}{3}$ hours	$1\frac{3}{4}$ hours*	$1\frac{3}{4}$ hours*	$1\frac{3}{4}$ hours
VIII	2 hours	2 hours*	$1\frac{3}{4}$ hours	$1\frac{3}{4}$ hours*	$1\frac{3}{4}$ hours*	2 hours
IX	2 hours	.....	$1\frac{3}{4}$ hours	.....	.....	.....

*Alternate weeks.

Practically all of the Manual Training taught in the school shops consists of wood work supplemented by a small amount of work in thin sheet brass. This affords very little variety. The aim of the instruction seems to be largely disciplinary, and in most cases the methods are formal. Each teacher holds to a somewhat rigid course of models or exercises such as plant label, plant stick, coat rack, and coat hanger. The details of these models are fixed, no individual variations being suggested. The emphasis of the instruction seems to be on accuracy, neatness and precision in working wood. Strict obedience in following detailed directions is usually insisted upon. Little opportunity is given the child to exercise initiative or inventiveness. Individual expression seems to have outlet in but two directions either by failure to meet exacting requirements, or in a few instances where the child may be allowed to select the design that is to be applied. An exception to the above statement should be made in the case of work observed at one of the schools.

The Manual Training work in Brookline is quite typical of shop work in many towns and cities. Manual Training in the schools is justified for its practicality, concreteness, and reality as supplemental to abstract book learning. It is unfortunate, therefore, that in so many school systems the shop work in the school in no way represents shop work outside of the school. In the Brookline schools, as in many other places, special shop processes and products of a distinctly academic type have been developed. The product of this type turned out in the Brookline Manual Training shops appears to be as good as that produced in schools elsewhere. In some instances the work by classes is considerably better than average work. As practical shop work, however, there is little in it that can interest boys in mechanical work. If boys are to be interested in mechanical processes they must be brought in contact with them on a realistic basis. To be real to boys the processes used in school should resemble processes used out of school. Experiences limited to wood, however, are not likely to stimulate interest in mechanical processes in other materials. The educative possibilities of a single material are too circumscribed to justify the spending of one and one-half

to two hours per week for three to five years upon it. In this part of New England wood work is not as typical as metal work, and in some communities the leather and textile industries are far more typical. Many materials and processes compare quite favorably with wood work in offering educational experiences. Then too, the local industrial significance of materials and processes has considerable bearing on their educational value in school work. To be educative in a true sense, work in school shops should be both real and typical. The relation between what is done in school and in the world should be obvious to the child. The making of wood projects by a slow painstaking process, which consumes many hours of time, when the child realizes that these same projects may be purchased in the five and ten-cent store, cannot give an impression of reality. On the other hand, if the typical home life of the child is considered in connection with the book type of education, the need for some agency to overcome one-sided development becomes apparent.

Brookline's location in the metropolitan district suggests that the Manual Training activities in the schools should represent the varied and significant activities of the city. A cultural education would not be complete that did not acquaint the individual with the typical activities of his environment. The Boston metropolitan district is the environment of Brookline children. So far as Manual Training in the schools is concerned, the children of Brookline are deprived of contact with the wonderful and varied activities going on about them.

A selection of Manual Training activities, that would give the children an intelligent appreciation of their own environment and at the same time develop powers of initiative in thinking and doing, could be based on a study of local activities that are significant and adaptable to school conditions. Such activities as transportation, communication, printing, building construction, metal work, electrical work furnish a partial list of possibilities for Manual Training in the Brookline schools. While transportation is studied simple cars and track could be worked out in soft metal casting, sheet metal, and wood. The telegraph and telephone could represent communication. If the organization is to re-

main as at present a simple inexpensive printing equipment should be installed in each grammar school and operated as part of the Manual Training, otherwise in the Junior High School. Practical carpentry and cement jobs which offer valuable educative experiences can usually be found about the school plants. Simple metal and electrical projects are well within the possibilities of grammar school boys. If a Junior High School is organized ample equipment and a proper teaching staff will be available for the upper grades. Bringing these children to one center obviates the necessity of duplicating equipment and makes possible the best use of the teachers' time.

But this work can be taught successfully by men only. It has become generally recognized that teaching grammar school shop work is not women's work. Good women teachers of Manual Training with special training in primary school pedagogy usually make excellent primary Handwork supervisors. This is the women's field in present day Manual Training.

The ninth grade classes in the Runkle, Lawrence and Devotion Schools do not have Manual Training. If a worth-while course in this subject were put in operation, these classes could well afford to take time for it. The large majority of children in high school do not receive training in manual or technical work. For such children, as well as for those who do not enter high school, a broad and practical Manual Training Course offers much as an educational asset.

When projects in the various materials have been selected that call for the applications of principles of design, they should be worked out under a plan of co-operation between the Drawing instructors and shop instructor. No such plan seems to be in operation in Brookline. If a supervisor of Drawing and a supervisor of Manual Training were each directing their respective fields, correlation would be far more possible than it is at present. Now there is no responsible director for either subject.

Worth-while Manual Training can hardly be developed in a school system as large as that of Brookline without special guidance. The services of a competent supervisor could be applied with advantage to the Manual Training, Practical Arts, or Junior

High School shop work if such a school is organized, and to high school shop work.

MUSIC.

The capacity to enjoy the best music and unite with others in giving it expression is the leading purpose of teaching music in our schools. But singing has two other values which help to justify the time and effort expended upon it in the schools of Brookline and elsewhere. It furnishes a strong bond of sympathy between the teacher and her pupils, and it greatly helps to bring about a true school spirit. All can spontaneously and heartily co-operate in singing, and when they do so, melody and harmony react to establish that school spirit which is so desirable in any school.

With the leading purpose of teaching Music clearly in mind, we are ready to ask, first, How can that purpose be obtained? and, second, To what extent is that purpose being obtained in Brookline?

No one will deny, I believe, that in order to develop and strengthen the love for the best music the children must sing the best music. They should have actual experience with the choice, the classic, models in the world of song. That means that a special effort should be made to select those simple and beautiful songs which live today because there is in them a fine quality which may make them immortal. These songs should be taught the children for the same reason that we teach them to memorize beautiful poems. We exercise great care in the selection of such poems, which the younger children often learn without being able to read the lines. But in the case of poetry we go farther, for we wish to give the children the power to read for themselves so that they will not be dependent upon others to read poetry for them. And so we help them to overcome the technical difficulties involved in learning to read, and in this way we extend their power of enjoying fine literature. Yet even after they have learned to read we continue to select for them and place before them the best models, the simple and beautiful poems with the hope that these may live in the hearts of the children and give joy and inspiration to their lives.

In the same way there are technical difficulties in learning to read music, pitch names, time names, rhythmic figures, and staff notation. How much time and effort shall we expend upon the mastery of the simple elements of the technical side of singing? One group of music supervisors says that this is the feature which claims the most emphatic attention. So they lay special stress upon individual work and upon sight singing. Their argument is that the pupil will enjoy in proportion to his intellectual power to overcome the technical difficulties which the bodily structure — the intellectual framework — presents, that when he has this power he is not only as self-reliant and as independent as he is in being able to read the words and lines of a poem, but that he also more keenly appreciates the vital spirit — the soul of music which lives within the body. With this belief, they teach sight singing not as an end in itself, but as a means to an end.

The other group of supervisors lays much stress upon rote singing. They do considerable, to be sure, with graded exercises, which the entire group of pupils learn and sing together, but they do little individual work in sight singing. They also spend much time and effort in getting good, sweet tones, on the ground, of course, that when the song is sung with sweet voices its refining, civilizing influence is greater.

There is a grave danger in laying undue stress upon technical difficulties, and the danger is twofold: In the first place, the graded exercises may be made so artificial and wooden that they dull the pupil's taste for good music and stifle his interest in music of any kind. He may come to hate the sight of his music book and to feel unhappy when the time comes for the singing lesson. And in the second place, there may be but little time left for the singing of those beautiful models of simple classic songs which nourish the spirit and enrich and refine the life of the singer.

It ought to be possible with correct methods of work and a fair time allotment to overcome in our elementary grades, to a reasonable extent, the technical difficulties and, also, to accomplish the pre-eminent purpose of teaching Music. By a reasonable power over the technical difficulties, we mean that at the end of the elementary school course nearly all children should be able

to read at sight or practically at sight such simple tunes as are sung by congregations in our churches. But to enable the pupils to gain this power there must be considerable individual work done by the use of individual slips, certainly in all the grades above the third. So far as we were able to learn, no individual slips are in use in Brookline below Grade V, none in Grades VIII and IX, and practically no sight singing in any grades. As a natural outcome, the sight singing which came under observation in the upper grammar grades and in the fourth and third-year classes in the high school was very weak. This can and should be remedied.

On the other hand, it is a pleasure to commend in strong terms the work in Music from the standpoint of voice quality, the spirit of the singing, and the kind of songs which were sung, either by rote or by note. Special attention is given to the selection of the best, and the children in most of the groups visited sang with warm enthusiasm and marked precision. Thirty-four folk songs are found in the first six grades of the course. Moreover, in order to enrich the children's musical experience still further, all the grammar school buildings are supplied with phonographs. In commenting upon this fact Supervisor Cole wisely remarks: "I believe that the children should sing, and that they should also listen to the best music. Both processes are necessary to their symmetrical development."

We recommend that the work in the first and second grades be confined almost or quite wholly to the singing by rote of the very best folk songs which can be selected for young children, and that the same care be exercised as now in getting a sweet, pure quality of tone. In the third grade simpler technical difficulties could well be taken up, and from that time on much attention be given to the individual singing of slips adapted to the special needs of the pupils. Such individual work would result in giving the children self-reliance and the power to read music. If this sort of work were done in a systematic and intelligent way, much the larger part of the children would be able to read simple music at sight at the close of their elementary school course.

An opportunity should be given, also, for pupils to take a course in Musical Appreciation in the high school. Such an extension of the Course of Study would certainly strengthen the good work which is now being done in Music in the Brookline schools.

CHAPTER X.

GRADES VIII AND IX.

Grades VIII and IX may be considered together advantageously, both because here arise a number of questions not applicable to the lower grades and because here must be handled certain matters upon which the Survey Staff has been specifically asked to pass judgment.

THE "CERTIFICATE TO HIGH SCHOOL."

Brookline appears to be pursuing a decidedly illiberal policy in the matter of promotion to the high school by requiring that pupils, in order to be thus promoted, not only must complete the ninth grade, securing the diploma, but must also secure the "certificate to high school." This certificate in at least two of the schools, the Lincoln and the Pierce, must be withheld almost every year from a very considerable fraction of the class, as may be judged from the showing for the past four years presented in the following table. Here we see that 160 pupils, an average of 40 per year, though they received the diploma for "completing" the elementary school course and had spent upon that course nine years in the hands of teachers decidedly better than average city teachers and in classes mostly much smaller than the average of city public school classes, yet these 160 were denied the high school certificate.

This policy of restricting admission to the high school is not much mitigated by the practice of giving to such excluded pupils the privilege of entering the School of Practical Arts; and, in fact, but few of them appear to be availing themselves of the latter privilege. Moreover, the following table does not tell the whole story of Brookline's restricted promotion from the ninth grade, as the figures for "certificated" pupils include a considerable number promoted conditionally "on three months' trial," and as no account is here rendered of pupils rated below the passing re-

quirement and accordingly classified to repeat the grade or quit school.

PROMOTION AND NON-PROMOTION TO HIGH SCHOOL.

<i>School</i>	<i>Number Completing the Course</i>				<i>Number Receiving Certificate</i>				<i>Number Denied Certificates</i>			
	1916	1915	1914	1913	1916	1915	1914	1913	1916	1915	1914	1913
Devotion.....	35	38	40	46	33	37	39	45	2	1	1	1
Heath.....	18	19	26	22	17	19	22	19	1	0	4	3
Lawrence.....	28	36	35	39	25	35	33	36	3	1	2	3
Lincoln.....	51	52	56	49	38	37	32	35	13	15	24	14
Pierce.....	63	73	70	80	50	64	50	57	13	9	20	23
Runkle.....	46	39	36	40	43	38	34	39	3	1	2	1
Totals.....	241	257	263	276	206	230	210	231	35	27	53	45

Total denied certificate in last four years..... 160

Figures from principals' special report on this subject.

Without any doubt most, if not every one, of the 160 pupils awarded the diploma for completing Brookline's ninth grade would have been welcomed into the high school of any other school system. Their exclusion from Brookline High School seems the less defensible in view of the fact that, even if these pupils were weak in the college preparatory subjects begun in Grade IX, they might at least have been admitted to the non-college-preparatory courses, the Technical Course, and the Commercial Course. It may be recommended, therefore, that the "certificate to high school" be abolished, or, if there is any strong feeling that it must be continued for the present in some form, that it shall operate to exclude only from the two college preparatory courses in the high school. As a matter of fact, if a general reorganization in the

intermediate grades is undertaken, in line with suggestions presented elsewhere, the certificate to high school will doubtless disappear automatically as being altogether inappropriate in the new organization. Going to high school in Brookline, it would seem, may be safely popularized to a considerable extent before there will arise any real danger of the pupils' failing to get that "adequate preliminary training" which the Superintendent has rightly advocated. (Brookline School Report, 1911, pages 32-33.)

SIZE OF CLASSES IN GRADES VIII AND IX.

In the section of this study devoted to the school plant, attention was directed to the near-overflow conditions in several of the nine-grade schools owing to the increase in upper grade enrollment, an increase that will certainly be greatly accelerated by the liberalizing of promotions to the high school and by any Junior High School development that may be undertaken. Here the size of classes in Grades VIII and IX is to be examined for the purpose of comparing these classes among themselves and comparing them as a group with the general average size of classes in all the grammar grades, and for the further purpose of determining whether the ninth grade is a serious enough hurdle in the school course to cause just at this point a marked elimination from school. To facilitate consideration of these questions, the following two tables have been prepared:

FOUR YEARS OF GRADES VII, VIII, AND IX.

	Devotion			Heath			Lawrence			Lincoln			Pierce			Runkle		
	VII	VIII	IX	VII	VIII	IX	VII	VIII	IX	VII	VIII	IX	VII	VIII	IX	VII	VIII	IX
1916	37	25	32	38	35	32	35	28	27	31	29	27	45	28	33	28	31	47
	33	26	28							31	35	27	40	25	37	29	28	
1915	29	32	38	39	39	18	40	34	31	36	32	29	43	29	37	37	54	55
	37	37								36	31	28	42	29	38	32		
1914	32	37	42	37	22	20	38	28	38	36	32	31	36	27	40	33	56	45
														29				
1913	43	42	43	32	26	29	30	43	37	34	35	32	40	32	38	49*	47	50
										34	32	29	42	35	38			

(Figures from Superintendent's annual tables of enrollment at end of October.)

*Table ambiguous here; perhaps another class or half-class should appear.

UPPER GRADES TO HIGH SCHOOL.

	1913	1914	1915	1916
High School — First Year Class IX (Class X).....	222	247	252	202
Total — Grade IX.....	296	285	274	290
Total — Grade VIII.....	327	289	345	317
Total — Grade VII.....	304*	344	371	347

(Figures for high school from tables for membership at end of December — except 1916, which is for November. Figures for grades are summarized from preceding table.)

*Perhaps should be greater; table for 1913 is ambiguous in Runkle column.

In the first of these tables class figures are given for Grades VII, VIII and IX through the past four years, Grade VII being included in order to show the preceding grade enrollment from which Grade VIII has been recruited. Studying, however, the columns for Grades VIII and IX only, one is at once struck with the great unevenness in the size of classes. The extremes are found in the Heath in classes of 18, 20 and 22, and at the other end in the Runkle in classes of 54, 55 and 56. This situation incidentally affords another commentary on the inadequate accommodations for the last two grades in the Runkle School. Now the important question arises, can any reorganization be effected to reduce or possibly wipe out altogether the present undesirable disparity in the size of these eighth and ninth grade classes, for under these conditions the educative effects upon the children and the instructional burdens upon the teachers in the different schools must be widely variant. The solution of this problem is suggested by the Pierce School, where during all four years under exhibit a noticeable evenness of classification has been attained. But the Pierce is just the school in which the largest number of eighth and ninth grades have come together at one place, and the

conclusion is evident that any plan for bringing together into one school a still larger number of the ninth grade or eighth and ninth grade classes would furnish among other advantages a ready means of leveling classes and equalizing teachers' work.

Another striking fact is disclosed by the first of the foregoing tables. Here it is shown that, though the general average size of classes (number of pupils per teacher given annually in the school report) in the grammar grades is not over 30 pupils, the enrollment in Grades VIII and IX under present conditions is very much above this average. Of the 72 eighth and ninth grade classes that the table presents, 44 range in size from 31 to 56 pupils (12 classes having over 40 pupils) and only 28 have the lower enrollment of 18 to 29 pupils. Again, the Pierce School leads in the amelioration of this unfavorable condition also; for, by the greater congregation of upper grade pupils here, this one school was able to produce one-third (nine) of the 28 under-30 classes. Would not a still broader plan of concentrating ninth grade or eighth and ninth grade classes bring about a further reduction of these greatly over-average, and for Brookline excessively large, upper grade classes?

Another noticeable unevenness in upper grade classification, brought about by the scattering of the work among several schools, is found in the foreign language sections of Grade IX in the four schools offering Latin and French. The table given below, and entitled "Foreign Language in Grade IX," presents figures of the number of pupils electing the two foreign languages in the autumn of 1916 in the Devotion, Lawrence, Pierce and Runkle Schools. By combining the figures first for Latin and then for French, one finds: four classes in Latin, aggregating 106 pupils, averaging 26 pupils per class, but being taught in classes of 19, 24, 29 and 34 pupils respectively; and four classes in French, aggregating 99 pupils, averaging 25 pupils per class, but being taught in classes of 18, 24, 25 and 32 pupils respectively. Without doubt the bringing together of these pupils into one center would make easy the equalizing of the foreign language sections.

Finally, reverting to the second table presented above, and entitled "Upper Grades to High School," one finds a very considerable

loss of pupils in the passage from the eighth grade to the ninth, as well as in the passage from the ninth to the high school. Loss at the latter point is to be expected, for the end of the elementary school course is here reached and a nine-grade diploma is won; but loss from eighth to ninth is very significant as indicating the inability of the schools to hold many pupils beyond eight grades — when high school seems still far off and there is also the well-known risk of missing the “certificate to high school.” Reading the figures of the table diagonally upward from year to year, beginning at the bottom, and combining them for the past three years, one gets the result: from Grade VII to Grade VIII there was a net loss of 68 pupils (figures 304, 344 and 371 becoming 289, 345 and 317 respectively); from Grade VIII to Grade IX there was a loss of 112 pupils; and from Grade IX to the first year of the high school there was a loss of 154 pupils. Obviously, from the point of view of reducing elimination in the Brookline school system, the ninth grade is a point requiring very serious attention. Is there any reorganization concerning which the confident prediction may be made that it will so mediate the passage from Grade VII to the high school as to prolong the schooling of a greater proportion of pupils than now survive Grade IX?

AGE OF PUPILS IN GRADE IX.

The successive school reports present annually an interesting paragraph headed "Age Conditions in Grade IX." The ages of the pupils are given in tables, the most recent of which is reproduced herewith from the report of 1915, page 38:

GRADE IX AGES 1915-16.

	Whole number belonging to Grade IX.	Between 11 and 12 years	Between 12 and 13 years	Between 13 and 14 years	Between 14 and 15 years	Between 15 and 16 years	Between 16 and 17 years	Between 17 and 18 years	Between 18 and 19 years
School A.	37	0	0	1	12	17	4	3	0
School B.	19	0	0	2	6	6	4	1	0
School C.	30	0	0	6	9	9	5	1	0
School D.	56	0	0	3	16	20	12	4	1
School E.	71	0	1	13	33	20	4	0	0
School F.	54	0	0	13	19	13	5	4	0
Totals.	267	0	1	38	95	85	34	13	1
Percentages.		0	0	14	36	32	13	5	0

"Pupils to complete the grammar school course in June, 1916."

The most significant fact revealed by this table is obtained by combining the figures along the percentage line. Doing this brings the result that 50 per cent of the ninth grade pupils are over 15 years of age and 18 per cent of them are over 16 years old. Following this item back for several years, one readily makes up a tabulation of:

GRADE IX AGE PERCENTAGES FOR FIVE YEARS

<i>Year</i>	<i>Per Cent Over 15 Years</i>	<i>Per Cent Over 16 Years</i>
1915-16.....	50%	18%
1914-15.	57	26
1913-14.....	54	20
1912-13.....	50½	16½
1911-12.....	39½	14½

From these figures it appears that the dominant age of ninth grade pupils has been for some time 15 years and over; and also that this age has been rising since 1911-12. Consequently, pupils in the Brookline school system, on completing the elementary school course, are in at least half of the cases at the age of 15 to 16, one year or more older than the "normal age" of 14 for completing the elementary school course in the United States; and, when those who go on to high school have completed the four-year secondary course, their dominant age will be 19 years rather than the "normal age" of 18 for high school graduation and completion of college preparation. This statement is borne out by the age-grade tables of the high school pupils, although in such an age item the showing may be expected to appear less unfavorable as higher and higher grades are examined, for the simple reason that more and more of the "over-aged" pupils will have withdrawn from school. Two questions, therefore, arise: First, when the great majority of

American cities pass their pupils from the first grade to the high school diploma and college admission in twelve years, why should Brookline devote thirteen years to a corresponding curriculum which is apparently not substantially more extensive than the common public school curriculum? Second, as the fifteen and sixteen-year-old pupils of the Brookline ninth grade are plainly "of high school age," can such an upper-grade reorganization be effected as will place these pupils in a situation more nearly resembling high school conditions than the present very limited departmental organization of Grade IX affords? In fact, despite the very pleasing relations manifested between pupils and teachers in the Brookline upper grades, the query inevitably comes: Are not these large ninth-grade boys and girls being now subjected to a quite unnecessary amount of *mothering*?

TEACHERS' ASSIGNMENTS IN GRADE IX.

In a former section attention was directed to the different burdens carried by upper grade teachers, owing to the very uneven size of eighth and ninth grade classes in the different schools. A close study of the departmental organization and assignments of instruction arranged by the six nine-grade school principals brings out the fact that some of the teachers' instructional loads in subjects to be taught are decidedly heavier than upper grade departmental teachers usually carry and also more extensive in scope than the assignments borne by many high school teachers. As examples of this the following may be cited: A Pierce School teacher is carrying the regular branches of the grade and in addition, Latin, French and Algebra; a Devotion School teacher is carrying the regular branches of the grade and in addition, Latin and History of England; a Heath School teacher is carrying the grade work and History of England; a Lawrence School teacher is carrying the grade work and History of England and Algebra; a Runkle School teacher is carrying the grade work and Latin, English Literature and History of England; and the Lawrence School principal is administering his school and teaching certain grade subjects and in addition Latin and French. With assignments as broad as these, embracing high school subject matter as

well as grade work can teachers thoroughly prepare for all their instruction and conscientiously examine 'all the pupils' work, especially in a situation like the Runkle with maximum-sized classes? A quite equitable, congenial and evenly balanced apportionment of instruction among teachers can be easily worked out where all the classes of Grade IX or any other grade are concentrated in a single school.

DIFFERENTIATION OF WORK IN GRADES VIII AND IX.

After seven grades of practical uniformity in all the schools, differentiation of curriculums occurs through Grades VIII and IX in such wise that the pupils have open to them a Manual Arts Course, a Household Arts Course, and an Academic or College Preparatory Course, the last offering elective Latin and French. This upper grade differentiation is quite in line with progressive practice elsewhere, for it produces adaptations of instruction to different sorts of pupils, develops the pupils' varying capacities, and accelerates preparation for a prolonged schooling in college and university. Such differentiation is now often so administered that the pupils may experience something of a "pre-vocational tryout" of their abilities (of which more will be said in the chapter on the School of Practical Arts). Unfortunately, however, in Brookline any such tryout is practically eliminated because no single school offers all three of the curriculums just defined. The Lincoln and the Heath Schools afford their pupils the extended work in manual and domestic arts, but give them no opportunity of electing the advanced academic work in the form of the foreign languages; and, on the other hand, the pupils in the Devotion Lawrence, Pierce and Runkle Schools have the opportunity of electing Latin or French, or both, thus getting a start in these advanced academic studies, but they have no chance to try the advanced manual and domestic work. And, as there appears to be little, or no, transferring of pupils from one school to another in order to get educational experiences not available in the pupils' local school, the practical result is that generally, if not invariably, the pupil is steered unresistingly into the special curriculum offered in his local school whether or not that is the best available course

for his own development. He probably knows little and thinks less of the other educational opportunities elsewhere in the city system, and he misses entirely the enlightenment that comes from being in a school where all the different work of various curriculums may be seen. Illustrating this doctrine by application to a particular situation, one may assent that in all probability some, if not all, of those seventy-odd ninth grade boys and girls in the four foreign language schools, but taking neither foreign language, would, if they had access to good manual and domestic arts work during the foreign language periods, be undergoing an experience more genuinely educative than the effects actually being wrought upon them by the "extra Grammar," "extra Arithmetic," and "drill upon what they need" that they are now getting.

As at the end of preceding sections of this chapter, here again and from another point of view it may be said that the collection of all the ninth grade classes into a single center would afford the opportunity of administering the differentiation of courses in the most effective manner. Under such conditions, moreover, the defects of the present partial departmentalism might be so far removed as to make promotion by subject in this upper grade school center quite as feasible as it is in an ordinary high school. As things are at present in Brookline, it would not be untrue to say that the city is conducting a five-year high school course with the first-year pupils uneconomically distributed in seven schools, the six nine-grade schools and the School of Practical Arts.

THE COST OF GRADE IX.

Attention being directed to Grade IX from a number of angles, it will be interesting to inquire what this grade costs the citizens of Brookline. The answer, however, is not so easy to determine; nor would all agree upon the proper way of arriving at the cost of any particular grade in a school system. Including the ninth grade, the full public school course in Brookline runs through thirteen years, and obviously it costs more annually to maintain a thirteen-grade system than a twelve-grade system would cost. Without attempting to settle to the satisfaction of every one the

strictly accurate mathematical procedure applicable here, one can get quite simply and directly two very significant figures.

The first is obtained from the teachers' salary roll. Here nine teachers are listed as teachers of Grade IX, receiving \$1000 a year each. It happens just at present that one teacher falls short of the \$1000 salary by \$25, but this is an accidental and immaterial circumstance. To the \$9000 thus obtained an appreciable fraction of the six principals' salaries should be added as directly chargeable to ninth grade instruction. Five principals are receiving \$2800 and the sixth receives this year \$2200; and these principals report their own participation in the instruction of Grade IX as requiring the following amounts of time per week: 7 to 8 hours; 5 periods of 30 minutes each; 10 periods of 45 minutes each; 8 periods of 45 minutes each; 9 hours; 8 periods of 45 minutes each. Summing up fractions of the principals' salaries in proportion to these fractions of the whole weekly schedule, one obtains an amount not less than \$3600; or assuming that a principal's teaching time is to be paid for on the basis of the \$1000 maximum for a full ninth grade teaching assignment, one gets about \$1400. Probably it would be not unfair to take the middle figure between \$1400 and \$3600, and say that \$2500 of the \$16,200 being paid to nine-grade school principals is chargeable to ninth grade instruction. Adding this \$2500 to the \$9000 paid the nine teachers produces \$11,500 as the annual cost of instruction alone involved in the maintenance of Grade IX.

The second simple way of looking at the expense of Grade IX is to count up per capita costs on the basis of the number of children in the grade. The Brookline School Report for 1915 accepts (p. 20) the State Department's computation of \$70.25 as the "cost per pupil" for the year 1913-14 in Brookline. Assuming that this figure is still about correct, and assuming further that it is particularly appropriate for application to an intermediate grade in the system like Grade IX, and multiplying this per capita item by the number of pupils in the grade, 290 at the end of October, 1916, one obtains the result \$20,372.50 as the cost of carrying Grade IX through the present year.

Put this \$20,372.50 beside the \$11,500 obtained above and

the conclusion is plain that Brookline is expending certainly from \$10,000 to \$20,000 annually in the maintenance of a grade that is found unnecessary in the country at large and that is being steadily discontinued in places where it has been in operation. Does it pay in Brookline?

WHY CONTINUE GRADE IX?

Apparently the advisability of discontinuing Grade IX has already been suggested in Brookline. At any rate, the subject has been touched upon in various school reports; and the Report of 1911 handles the matter (pages 31-33) in a three-page discussion on "Length of Elementary School Course." Though conceding "that a considerable number of places, hitherto maintaining a nine-year course, have adopted the eight-year plan," the report upholds Brookline's "refusal to conform to a prevailing tendency." At the end of the argument, however, occurs the qualified statement that the nine-grade course may well be retained "unless and until there take place in Brookline very great changes in conditions." Doubtless conditions have changed considerably during the five years since this was written, and very marked changes in upper grade conditions would follow promptly upon such a reorganization in the middle of the school system as would congregate into a single center all the pupils of one or more of the grades between Grade VI and the present second year of the high school.

The nine-grade elementary school has been all along not at all a national, but a distinctly New England institution, and every year brings reports of additional New England cities abandoning this extension of the elementary course — just recently, for example, the journals reported: "New Bedford, Mass., lengthens the school year two weeks and drops the ninth grade." The Report of the United States Commissioner of Education for the year 1912 (Vol. I, pages 140-141) states: "Some years ago many cities had nine grades in the elementary school; now very few have more than eight, and some but seven. The tendency is undoubtedly toward shorter and simpler elementary courses. New England was for many years the stronghold of the nine-year plan. Practically all cities of any size in New England now have

eight grades, and a few have adopted the 'six and six' plan." A late bulletin from the national Bureau of Education (Bulletin 1916, No. 8) is authority for the statement that the "nine-year elementary course dates back to 1872, when the school superintendents of New England, in formal session at Worcester, Mass., fixed the age of entrance at five and adopted a program of studies for primary and grammar schools to cover nine years." Whether or not Brookline children formerly, before the introduction of the kindergarten, began the elementary course at the age of five, the school reports indicate that they no longer do so; see, for example, the Report for 1911, which says (page 30): "In Brookline the decided majority of pupils entering the lowest primary grade (Grade I) are at least six years of age."

Now Brookline, because of her good fortune in having a comparatively low ratio of pupils per teacher, and because of her facilities for getting good teachers, ought to be even more able than most cities to pass her children successfully through any reasonable elementary school course in eight years and through the American high school course, including fully adequate preparation for college in four additional years. If at present more than the college preparatory assignment is undertaken in certain subjects (*e.g.*, Latin, Mathematics or History) in the grades between Grade VIII and the last year of high school, one asks whether such extended instruction in certain fields is the best use to make of the teacher, time and salary expenditure involved. If, on the other hand, more than the prevailing elementary school curriculum is undertaken in the nine-grade course, one asks whether the gains to the pupils are sufficient to compensate for the time expenditure of a year more on their schooling, a very pertinent question in these days when economy of time in education is a universal desideratum.

The additional studies constituting the principal advantages brought by the ninth grade in advanced work are the introduction to Latin, French and Algebra, and the elementary History of England. Of these, the first two, Latin and French, and probably the third also, Algebra, are given wholly or chiefly in the interests of pupils who intend entering the high school; so that these sub-

jects cannot be regarded as of prime importance for pupils who will go no farther than the end of the elementary school course, if that far. Again, the Latin and French are not offered in two of the schools, are offered as electives only in the other four schools, and are not taken at all by a considerable number of the ninth grade pupils in those schools (37 per cent at present, as will be shown below). Moreover, the Latin and French, and probably the Algebra also, of the ninth grade are not really needed for admission to and success in the first year of at least two of the courses in Brookline High School, the General and Commercial Courses, and probably this is the case, too, with a third course, the Technical Course — a course, however, now in so dwindling a state that it should probably be taken over into another part of the school system (see chapters on the High School and the School of Practical Arts). The fourth study, elementary History of England, does constitute a real gain for pupils not going on to high school, but the subject appears again as the English History of the third year of the high school, and the presence of this study in both elementary school and high school is not regarded as an unmixed blessing by some of the teachers themselves, for on the one side a teacher says, "After our ninth grade History the pupils look upon the English History in the high school as largely a mere repetition," and on the other side a teacher says, "Before our high school curriculum revision, when English History was in the second year, the ninth grade History took all the life out of our work, but with English History up in the third year it is now *not so bad*." Finally, there is in Brookline no systematic organization of the work to enable pupils successful in the high school subjects begun in the grades to shorten their time for running the whole course and perhaps win the high school diploma in four years from the beginning of Grade IX, a plan very carefully worked out in some other cities where college preparatory subjects are begun in the elementary school.

Another aspect of the question of the final net gain resulting from Grade IX appears in an examination of how pupils not taking Latin or French or both are occupied during the foreign

language periods. The number of pupils in this class is larger than might be supposed, as can be seen from the following table:

FOREIGN LANGUAGES IN GRADE IX.

	<i>Devotion</i>	<i>Lawrence</i>	<i>Pierce</i>	<i>Runkle</i>	<i>Totals</i>	<i>Percentages</i>
Pupils taking both Latin and French	22	14	19	20	75	36%
Pupils taking Latin only	7	5	5	14	31	} 27%
Pupils taking French only	2	4	13	5	24	
Pupils taking neither Latin nor French	29	5	33	9	76	37%
Totals	60	28	70	48	206	100%

These figures, obtained in the schools in November, 1916, may be slightly inaccurate owing to the absence of a few pupils on the day of the inquiry.

Here are pupils to the extent of 37 per cent of the whole grade not taking either foreign language and additional pupils to the extent of 27 per cent taking only one foreign language, a total of 64 per cent of all the pupils to be kept profitably occupied during the foreign language periods. The principals' statements in reference to the work of those pupils during this time indicated that they were chiefly occupied with drill, practice work and reviews in the form of "extra English," "extra Arithmetic," "extra Algebra," and "what they need most," an account by no means wholly satisfying. Hence, although in some cases an actual educative advance may come in the foreign language time for pupils not taking a foreign language — for example, in the "business letter-writing" and "citizenship lessons" in the Pierce School — it seems altogether doubtful whether the returns to the pupils

through the year in place of foreign language are of much real value.

The last item here to be posted in the debit column of Grade IX consists of a certain discrimination that is being practiced against Brookline pupils, both in the town itself and elsewhere, because the Brookline elementary course is on the nine-grade plan. An elementary school graduate from an eight-grade system in another city, Boston for instance, on coming to Brookline is admitted directly into Brookline High School if he will elect one of the three non-college-preparatory courses, the General or Technical or Commercial Course; the Brookline pupil from the end of Brookline's eighth grade may not enter Brookline High School at all, not even to pursue as does the former pupil a non-college preparatory course, but must first spend the additional year in Grade IX, although it is to be presumed that the educational accomplishment at the end of eight grades in Brookline is fully equal to the work of any other city's eight-grade course. On the other hand, Boston similarly discriminates against the Brookline pupil from the eighth grade (as a high official in the Boston school system has explained) by denying him admission to a Boston high school except upon examination, on the ground that he has not completed an elementary school course, whereas a graduate from any eight-grade system is excused from the examination and admitted upon his eighth grade diploma. It must furnish small comfort to any Brookline parents who have felt this latter discrimination, to know that Brookline in a measure gets even with Boston or any other city by requiring that the eighth grade graduate from outside if he wants to pursue a college preparatory course in Brookline, must go down and begin in Brookline's ninth grade and thus take five years to prepare for college, when he could have accomplished his college preparation in four years in a high school of Boston or almost any other city.

The conclusion to which all the foregoing paragraphs of this section lead is: Why continue Grade IX? If, as seems certain, this grade will be abolished eventually, why not now or at least soon, planning for it now? Brookline's ninth grade might be considered a worthy extension of public school opportunities if

the city possessed no high school — but it has the high school and the Practical Arts School. And Brookline can have a certain very valuable new school, a possible development to which the next section will be devoted.

A JUNIOR HIGH SCHOOL FOR BROOKLINE.

The discussion presented in the foregoing sections points clearly to the desirability of a reorganization in the middle part of Brookline's school system, so that a concentration of classes in certain grades may be effected; and just as clearly it may be said that such a reorganization can be readily obtained by the establishment of a *Junior High School in Brookline*.

At this date, and for so enlightened a community as Brookline, no elaborate definition or description of the Junior High School as a type is needed. It may be well, however, to record the concise definition adopted tentatively by the United States Commissioner of Education (Commissioner's Report, 1914, Vol. I, pages 5, 137) which is "an organization of Grades 7 and 8 or 7 to 9 to provide by various means for individual differences, especially by an earlier introduction of prevocational work and of subjects usually taught in the high school"; and it may be noted that already three years ago (academic year 1913-14) perhaps as many as 193 cities had Junior High Schools of some sort. (I. c., page 147.) It may be well also to say that the recent enthusiastic movement for the introduction of Junior High Schools into school systems, large and small, in all parts of the United States is quite the opposite of anything like a mushroom, overnight development of faddish theorizing; for the present confident setting up of Junior High Schools in many places is in reality the outcome of prolonged discussion and careful experiment extending back for a period of more than two decades. (See United States Bureau of Education Bulletin, 1916, No. 8.) Moreover, data in the office of the United States Commissioner of Education and numerous articles in the educational journals and in city school reports indicate that for at least five years various cities have been actually

experiencing the benefits claimed for the Junior High School organization.

Specifically for Brookline one may expect, following in general the indications of present educational shortcomings as set forth in preceding sections of this report, that the proposed Brookline Junior High School would:

1. Render smoother the transition from the undepartmentalized and undifferentiated grades to the completely departmentalized and differentiated *Senior High School*; reduce elimination of pupils from school and therefore increase upper grade and high school enrollment, and popularize the extended preparation for good citizenship to be offered in the Senior High School, the new Brookline High School.

2. Strengthen the administration of the beginnings of college preparatory education in grades below the tenth grade.

3. Afford the opportunity for a genuine "prevocational try-out" experience to the full extent of the facilities the school system could provide — such facilities being far more easily, economically and systematically provided in a single center than when distributed, as at present, quite ineffectively and undemocratically over seven centers. This involves, of course, an improved differentiation of courses and better provision for pupil differences.

4. Make easy the equalization of the classes, including the foreign language classes, concentrated in the Junior High School; and reduce, or even wipe out altogether, the over-large classes, particularly those exceeding 40 pupils.

5. Remove the larger and older pupils from schools composed mainly of younger children, and bring pupil, of high school age under conditions more like regular high school conditions — and therefore more suitable to their age and more stimulating to vigorous adolescent development — than are the conditions now prevailing in Grades VIII and IX.

6. Accomplish, as soon as the school authorities see fit, the abolishment of Grade IX and the reduction of the normal period for passing from the beginning of Grade I to the diploma of Brookline High School from 13 years to 12 years.

7. Reduce the over-heavy teaching assignments now imposed upon certain eighth and ninth grade teachers, and equalize all the assignments of the teachers in the Junior High School organization.

8. Effect various improvements in the administration of the grades embraced in the Junior High School, introducing, for example, promotion by subject in much the same manner as such promotion is conducted in the standard American high school.

9. Co-ordinate all the instruction offered in the intermediate level of the school system by the merging of the School of Practical Arts into the Junior High School. (See the chapter on the School of Practical Arts.)

10. Furnish to pupils, teachers and community the stimulus of a new, interesting and progressive composite intermediate school that will test out early adolescent capacities; serve as an excellent first preparatory school for pupils bound for college; serve equally as a finishing school for those intending to enter employment at the end of the ninth or tenth grade; and also serve, to a certain extent, as an elementary industrial school.

Now to dictate specifically the steps to be followed in accomplishing the Junior High School reorganization here recommended is beyond the province of this report because, first, this is a matter the working out of which should be left to the professional executives of the School Committee; and second, as the proposals here submitted contemplate several years for their complete accomplishment, any detailed formulation of procedure at this time would be subject to all the revision made advisable or necessary by the continuous changes going on in any social situation. Nevertheless, in general terms some such action as the following may be suggested:

First. As soon as a suitable building is ready (compare the chapter on The School Plant), bring together, to form the Junior High School, the pupils of the present Grade IX, the pupils of the School of Practical Arts, and some or all of the pupils of Grade X, the present high school first-year class. This combination will form the first stage of the new development. Removal of the last-named group of pupils from the present high school building

will make way for an immediate start upon the splendid new Brookline High School (recommended in the chapter on Buildings), to be erected in two successive sections.

Second. Abolish Grade IX, doing this in whatever way will produce least disturbance to the teachers involved and least temporary maladjustment for the pupils concerned. Then bring into the Junior High School the pupils of Grade VIII, who, with the pupils of the new ninth grade (old tenth or first year of high school), now presumably all in the Junior High School, will form the population of this new school through the second stage of its development.

Third. By this time the increase in the school enrollment, accompanied by changes in elementary school housing, may be expected to make desirable the inclusion of Grade VII in the Junior High School organization; so that this school will then, in its final stage, embrace the seventh, eighth and ninth grades of the school system, leaving to Brookline High School as the town's Senior High School the three highest grades, the tenth, eleventh and twelfth, which grades will have grown to an enrollment much in excess of the enrollment of the last three grades of the system at the present time.

Fourth. In view of Brookline's increasing population, in 1910 amounting to 39.4 per cent more than in 1900 and estimated to be about 35,000 on January 1, 1917 (State census for 1915 giving 33,490), it is likely that the new Brookline High School will soon have a full house with the last three grades only; and it will not be surprising if at no distant date there arises a demand for a second Junior High School. Unless, in fact, Brookline's experience in the next 10 years is altogether different from that of practically all other progressive cities, she is certain, if she introduces the Junior High School unit, to see her school grades from the seventh grade up increase in enrollment at a much more rapid rate than they have heretofore increased and also at a more rapid rate than the population increases.

By way of conclusion to this section, the point must be made that at least as much care should be exercised in the selection of teachers for a Junior High School as is exercised in securing

Senior High School teachers; and it may be wise, if the Brookline Junior High School here proposed does come into being, to have the next revision of the salary schedule provide for the teachers of this intermediate school a maximum salary more fairly intermediate between the maximum for the lower grades and the Senior High School salaries than is the present eighth and ninth grade maximum of \$1000. Any new requirements formulated to define the qualifications for Junior High School teaching may by rule be made not operative against teachers already in the service in Grades VIII and IX whenever any such teachers are found to be actually, though perhaps not technically, qualified for a Junior High assignment; and the indications are that in personality, attitude toward pupils, academic and professional scholarship in particular lines, and practical classroom efficiency, a number of the present eighth and ninth grade teachers either already are or can easily render themselves fully acceptable for Junior High School work.

CHAPTER XI.

THE HIGH SCHOOL.

Various features of Brookline High School have been touched upon in other chapters of this report, particularly in the chapters on School Population, Grades VIII and IX, and the School of Practical Arts. This important unit of the town school system will now be studied in some detail under the five headings: Distribution, Elimination and Graduation of Pupils; Building and Equipment; Program of Studies and Curriculums; Organization and Management; Teachers and Teaching.

DISTRIBUTION, ELIMINATION AND GRADUATION OF PUPILS.

The United States seems to be surely passing into an educational era when secondary education will become as universal as elementary education is now. The federal Commissioner of Education has officially declared his expectation of this result, citing figures from the Census Department and the Bureau of Education. When it is shown that from 1890 to 1910 the population of the country increased 41 per cent while the number of secondary schools increased 150 per cent and the number of secondary school pupils increased 260 per cent, it is time for the public high school, as the predominant and the democratic secondary institution, to abandon all thought of holding to the old narrow, traditional, academic point of view, and to assume courageously the needed leadership in passing all the people on from universal literacy to universal enlightenment — and enlightenment is now well understood to be derivable from sources other than the historic classics and mathematics, and from curriculums other than the common "college preparatory course," though these time-honored disciplines still have their place.

Brookline is plainly feeling, in increased high school enrollment, her participation in the country-wide growth of the second-

ary school; and she has also made progress in expanding the high school program of studies, and in setting up new curriculums to meet the new social needs so manifest in the community. The latter features of Brookline High School will be treated in a section below; the former feature, increased high school enrollment, was treated in the chapter on the School Population, where, however, it was shown that, although half the total school increase in Brookline from 1909 to 1916 has occurred above Grade IX, nevertheless this town is by no means in the front rank of cities in the proportion of her high school enrollment to her total school enrollment. Recommendations toward popularizing high school attendance in Brookline are presented elsewhere in this report, including the discontinuance of Grade IX and the development of a Junior High School. One point, appropriate to be here adduced in reference to the proposed Junior High School, is that the pupils' success in Brookline High School, in subjects begun now below the first high school year, for example, Latin and French, indicates the complete possibility of producing in Brookline as smooth and satisfactory an articulation between Junior and Senior High Schools as has been brought about in other cities, large and small.

Those recommendations for an intermediate reorganization were submitted not only for the sake of pupils not going on to college, but particularly for those bound for college, in order to reduce their college preparatory period by at least a full year; and studies have been made of the age-grade distribution through the high school and also of the number of graduates annually entering college, to determine whether Brookline High School pupils are in fact a year older than they ought to be and how many of the graduates are going on for four more years in college. The following tables show the distribution of the pupils of the years 1915 and 1916 over the range of ages. (Figures supplied by the principal.)

On examining these tables, one first notes that, as this record is taken in the autumn, the time of year most favorable for a low age-grade showing, certainly many, perhaps most, of these pupils will have passed into the next higher age before they complete

the grade in which the tables place them; and consequently the dominant ages of pupils in all four years, according to both tables,

AGE-GRADE DISTRIBUTION, AUTUMN, 1915.

<i>Ages in Years</i>			13	14	15	16	17	18	19	20	21	22	23	Totals
First Year	Class	Boys	4	25	52	35	13	3	...	...	...	...	...	...
	of	Girls	1	19	47	44	25	4	...	...	...	...	1	...
	1919	Totals	5	44	99	79	38	7	...	...	...	...	1	273
Second Year	Class	Boys	...	4	21	34	31	6	3	1	...	...	...	...
	of	Girls	...	1	29	36	21	15	1	2	1	...	...	...
	1918	Totals	...	5	50	70	52	21	4	3	1	...	...	206
Third Year	Class	Boys	...	...	4	10	28	17	13	1	...	...	...	...
	of	Girls	...	...	1	14	27	24	3	1	...	...	...	...
	1917	Totals	...	...	5	24	55	41	16	2	...	...	...	143
Fourth Year	Class	Boys	...	...	...	1	16	26	10	4	...	...	...	...
	of	Girls	...	...	...	2	12	22	25	3	...	...	...	...
	1916	Totals	...	...	...	3	28	48	35	7	...	...	...	121

AGE-GRADE DISTRIBUTION, AUTUMN, 1916.

<i>Ages in Years</i>			13	14	15	16	17	18	19	20	21	Totals
First Year	Class	Boys	3	21	37	21	8	...	...	...	...	...
	of	Girls	4	30	53	20	5	...	...	...	...	...
	1920	Totals	7	51	90	41	13	...	...	...	...	202
Second Year	Class	Boys	1	4	24	38	22	4	...	1	...	...
	of	Girls	...	5	28	35	28	9	...	...	1	...
	1919	Totals	1	9	52	73	50	13	...	1	1	200
Third Year	Class	Boys	...	...	6	19	20	12	2	...	...	...
	of	Girls	...	...	6	27	32	14	7	...	...	...
	1918	Totals	...	...	12	46	52	26	9	...	...	145
Fourth Year	Class	Boys	...	...	...	2	14	18	5	3	...	...
	of	Girls	...	...	...	...	20	25	8	2	...	...
	1917	Totals	...	...	...	2	34	43	13	5	...	97

are a year or more above the "normal" age of 14-15 for first year, 15-16 for second year, 16-17 for third year, and 17-18 for fourth year. This fact appears quite strikingly in the class just admitted to high school, the class of 1920 in the second table; for, of the 202 pupils recorded, 144 have already reached the age of 15 to 17 years, while only 58 are 14 years old or younger. The tables also show that, in the ages above the normal for the grade, it is often the girls rather than the boys who remain in school; for example, the class of 1917 in the second table has 35 girls as against only 26 boys beyond the age of 17.

Another fact apparent from these tables is the extensive elimination of the over-normal-aged pupils as the entrants of each year pass up the high school grades; and this process makes the upper years show up not so badly as they ought to appear from the point of view of over-age of pupils, for the simple reason that a large proportion of the over-aged have quit school, leaving the fourth-year group a highly selected class as to age as well as in other respects. Consider, for example, the class of 1919. In passing from their first year (table of 1915) to their second year (table of 1916), the 99 pupils of age 15 have fallen off to 73 of age 16, the 79 of age 16 have decreased to 50 of age 17, the 38 of age 17 have dropped to 13 of age 18, and the seven of age 18 are lost entirely from the column of age 19 in the second table. Similarly, in the class of 1918, on passing from their second year (table of 1915) to their third year (table of 1916), the 70 pupils of age 16 fall off to 52 of age 17, the 52 of age 17 and the 21 of age 18 drop to 26 of age 18 and nine of age 19 respectively, and the eight of ages 19 to 21 disappear altogether from the columns of ages 20 and 21 in the second table. Finally, the class of 1917, the present graduating class, in passing from their third year (table of 1915) to their fourth (table of 1916), have lost (143 to 97) 46 pupils, a loss of 32 per cent; and 41 of these (28 from age 18 to age 19, plus 11 from age 19 to age 20, plus two from age 20 to age 21), would have fallen in the over-18 age columns of the table of 1916.

The conclusion is evident that Brookline High School pupils are a year or more older than they ought to be according to

"standard" high school ages; and that, even though the town may be doing better than many other places in holding pupils to graduation (a fact to be shown later), nevertheless, the advanced age of the upper class pupils is one potent factor in the elimination that does occur. Certain studies, indeed, have produced percentages of "high school graduation expectancy" for various ages of the entering pupils, with the result that this percentage falls very rapidly as the age of the first year pupils rises; thus one study concludes that of 12 to 13-year-old entering pupils 65 per cent may be expected to be retained to graduation, of 13 to 14-year-olds 39 per cent, of 15 to 16-year-olds 29 per cent, and of 16 to 17-year olds only 17 per cent. (Irving King, "The High School Age," page 196.) If, therefore, many pupils, especially boys, cannot be held in high school beyond the age of 18, and if a complete high school education is required for enlightened citizenship and efficient service, then manifestly appropriate is the recommendation for such a reorganization of the school system as will make high school graduation before the age of 19 the common accomplishment.

Of importance also in connection with this age-grade inquiry is the question of the number of Brookline High School graduates going annually to college; for any reorganization to save these students a year or more below college is an urgent need in view of the fact that a considerable proportion of them have before them not only the full four-year collegiate course but also, beyond that, a professional course to pursue. Though the school should not be regarded as primarily a college preparatory school, the number of graduates going on to college is large, as the following table demonstrates:

BROOKLINE HIGH SCHOOL GRADUATES TO COLLEGE.

Year	Number of Graduates	Number to College	Per Cent	Year	Number of Graduates	Number to College	Per Cent
1916	105	39	37.1	1910	71	21	29.6
1915 to	} Exact data not avail- able			1909	76	31	40.8
1913				1908	54	15	27.8
1912	87	37	42.5	1907	59	24	40.7
1911	73	31	42.5	1906	74	36	48.6

(Figures for 1916 from the principal; other figures from the annual school reports.)

From these figures it may be inferred that the college preparatory function of Brookline High School, though still very important, is now less significant in the life of the school than it was formerly, before the strong development of the General and Commercial courses that the last four years have brought about. Yet, so long as more than a third of the graduating class goes on to college, the most economical administration of college preparation between Grade VII and the end of the senior year of high school remains, for these pupils, at least, as much as for any others, an urgent desideratum.

The list of colleges to which Brookline graduates have gone includes the following 22: Amherst, Boston University, Bowdoin, Bryn Mawr, Cornell, Dartmouth, Harvard, Haverford, Massachusetts Institute of Technology, Mount Holyoke, Princeton, Radcliffe, Simmons, Smith, Tufts, University of Maine, Vassar, Wellesley, Wesleyan, Williams, Worcester Polytechnic and Yale. And the reputed success of the city's boys and girls in this wide range of higher institutions speaks well for the quality of their preparation in Brookline High School.

The next feature of the high school inviting study is the present status and the trend of development in the distribution of pupils over the four years of the school and in the proportion of each entering class that the school succeeds in retaining until graduation. Upon these aspects of the American high school extensive statistical studies for the country as a whole have been made with the following results:

**ENROLLMENT OF HIGH SCHOOLS IN UNITED STATES.
DISTRIBUTION BY GRADES IN ESTIMATED PERCENTAGES.**

<i>In Year</i>	<i>First Year</i>	<i>Second Year</i>	<i>Third Year</i>	<i>Fourth Year</i>	<i>Total Per Cent</i>
1913	41.0	27.0	18.5	13.5	100
1912	41.0	27.0	18.5	13.5	100
1911	41.9	26.8	18.3	13.0	100

**HIGH SCHOOLS OF UNITED STATES.
PERCENTAGES OF ENTERING CLASSES RETAINED TO GRADUATION.**

<i>First Year Class of the Year</i>	<i>Graduated from</i>	<i>Estimated Per Cent Retained</i>	<i>Result</i>
1910-11	1913-14	39.1	
1909-10	1912-13	38.8	37%
1908-09	1911-12	39.6	to
1907-08	1910-11	37.9	41%
1906-07	1909-10	40.5	

(See Report of United States Commissioner of Education, 1914, Vol. II, pages 13, 14; 1913, Vol. II, pages 7, 8; 1912, Vol. II, page 15.)

THREE SPECIAL STUDIES OF RETENTION TO GRADUATION.

<i>Studies Published in the Year</i>	<i>A Given Class Shrinks Through the Four High School Years in the Ratio of</i>	<i>Per Cent of En- trants Retained to Graduation</i>	<i>Result</i>
Thorndike's 1907	27 to 8	29.6	25%
Ayres's 1909	40 to 10	25.0	to
Strayer's 1911	80 to 26	32.5	33%

(See United States Bureau of Education, Bulletin 1916, No. 8, page 101.)

Without discussing the variation between the Thorndike-Ayres-Strayer studies and the corresponding tabulations in the commissioner's reports, one may make an interesting comparison between the foregoing figures and corresponding figures from Brookline High School as presented in the following table:

**BROOKLINE HIGH SCHOOL MEMBERSHIP BY GRADES
AND IN SUCCESSIVE YEARS.**

Academic Year	First Year	Second Year	Third Year	Fourth Year	Total Pupils	Percentages in Each Grade				Per Cent Retained to Graduation
						First	Second	Third	Fourth	
1916-17	202	200	145	97	644	31.4	31.0	22.5	15.1	1913-17 43.7
1915-16	252	190	141	112	695	36.3	27.3	20.3	16.1	1912-16 57.7
1914-15	247	187	131	88	653	37.8	28.6	20.1	13.5	1911-15 45.4
1913-14	222	162	106	82	572	38.8	28.3	18.5	14.4	1910-14 39.0
1912-13	194	148	97	87	526	37.0	28.1	18.4	16.5	1909-13 46.0
1911-12	194	141	113	95	543	35.7	26.0	20.8	17.5	1908-12 46.3
1910-11	210	154	116	81	561	37.4	27.5	20.7	14.4	1907-11 40.7
1909-10	189	157	99	79	524	36.0	30.0	18.9	15.1	1906-10 47.3
1908-09	205	136	105	83	529	38.8	25.7	19.8	15.7	Result
1907-08	199	130	102	68	499	39.9	26.1	20.4	13.6	39%
1906-07	167	126	78	63	434	38.5	29.0	18.0	14.5	to 58%

(Figures for 1916-17 from Principal; for other years from *School Reports*, number belonging December or January.)

Here the columns of percentages in each grade show that in every academic year for the past 11 years the grade distribution in Brookline High School has been better than that given in the federal table for the whole country; for Brookline has smaller percentages in the lowest grade, first year of high school, and larger percentages in the two highest grades, third and fourth years, a fact indicative of Brookline's superiority over many other cities in holding a greater proportion of her high school pupils on into the graduating class. The same fact is brought out most strikingly in the last column, where it is seen that, for the past eight years, the percentage of the fourth year class entering four years previously (the arrows in the left-hand columns facilitate tracing these eight classes through the school) ranges from 39 per cent to 58 per cent as against 25 per cent to 33 per cent in the Thorndike-Ayres-Strayer computations and 37 per cent to 41 per cent in the estimates of the United States Commissioner's Reports. The record of the class of 1916 is the most noteworthy, with a fourth year class not much under 60 per cent of their entering group in 1912-13. On the other hand, all this good showing in the matter of grade distribution and retention to graduation in no way contradicts the conclusion reached above in reference to the elimination of "over-age" pupils; and one sees for Brookline the possibility of a still more creditable, and indeed quite unique, record in retention of pupils to high school graduation if the reorganization recommended in this report is effected.

The table last given shows also, in the column of "total pupils," the marked increase in high school enrollment in the period from 1906 to the present time, an increase of 60.1 per cent (434 to 695) to 1915-16 and 48.4 per cent (434 to 644) to the current school year, in which a doubtless temporary falling off has appeared. Yet, as was brought out in the chapter on the School Population the Brookline ratio of high school pupils to all pupils in the school system is still by no means up to that attained in many other cities in Massachusetts and elsewhere, from which even less might be expected in high school attendance than is expected of a community like Brookline.

DISTRIBUTION BY COURSES, 1916-17.

Years	<i>I College Preparatory</i>		<i>II College Technical</i>		<i>III Technical</i>		<i>IV General</i>		<i>V Commer.</i>	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
First	30	39	21	..	16	..	16	38	10	33
Second	32	34	33	..	8	..	7	41	13	29
Third	19	32	27	1	2	..	3	30	10	22
Fourth	10	13	18	..	1	..	6	21	8	21
Total	91	118	99	1	27	..	32	130	41	105
	209		100		27		162		146	

(Figures from the principal, as of November, 1916.)

DISTRIBUTION BY COURSES FOR SIX YEARS.

<i>Academic Year</i>	<i>I Col. Prep. formerly Classical</i>	<i>II Col. Tech. formerly Sub-Class.</i>	<i>III Technical</i>	<i>IV General</i>	<i>V Commercial</i>	<i>Totals</i>
1916-17	209	100	27	162	146	644
1915-16	204	110	49	174	158	695
1914-15	24	173	158	142	156	653
1913-14	21	141	154	105	143	564
1912-13	12	152	147	101	116	528
1911-12	10	180	139	93	130	552

(Figures for 1916-17 from preceding table; other figures from annual *School Reports* — number belonging December 31. Last three totals do not tally with totals given in Table of Membership by Grades, a discrepancy in the records.)

The above tables present the distribution of the high school pupils among the several courses in the current academic year

and the trend of enrollment by courses for the past six years. The courses are now named: *I College Preparatory, II College Technical, III Technical, IV General, V Commercial*. Prior to the curriculum revision of 1915, Course I was called the Classical Course (requiring Greek) and Course II the Sub-Classical (requiring Latin).

Here appears the great shift of enrollment (indicated by the arrows) that occurred in 1915 when the curriculum was revised, (See below, section on Program of Studies and Curriculums.) The moribund Classical Course prescribing Greek was suddenly rejuvenated into the present vigorous College Preparatory Course: in which Greek appears only as a gently expiring elective: many pupils passed over from the Sub-Classical, now College-Technical, Course into the College Preparatory. At the same time the change of the Sub-Classical Course into the present College-Technical without Latin drew many pupils into this course from the Technical, which is now the vanishing course. In fact the Table for 1916-17 shows how the Technical pupils have become so few, especially above the first year, that they must be merged into other instruction groups. These two tables therefore furnish a statistical basis for the recommendation that, unless conditions change very much in a short time, the Technical Course should be abandoned. (See below, section on Program of Studies and Curriculums; and compare the chapter on the School of Practical Arts and the section on a Junior High School in the chapter on Grades VIII and IX.) The second table also exhibits the steady growth and stability of the Commercial Course and the rapidly growing importance of the General Course, the figures in these two columns clearly suggesting the need of intelligent and sympathetic direction and development of these two curriculums.

BUILDING AND EQUIPMENT.

In the chapter on the School Plant the problem of the high school building is treated fully. The manifest imperfections of the present building for this large and growing school are clearly recognized by the School Committee and the people of the community. Doubtless the planning and supervision of the new

building will be entrusted to architects who are specialists in school architecture and equipment. As long as present conditions prevail, the school must endure handicaps ranging from window blinds that prevent the opening of windows and rows of unsightly and obstructive lockers in classrooms, to such more serious housing features as poor ventilation, utterly inadequate facilities for physical education and gymnasium practice, regular use of a room so inappropriate as to be styled by pupils "the dungeon," and "lunchroom accommodations" that should be, for Brookline, quite intolerable. Moreover, the present obvious lack of proper space and of needed administrative equipment and conveniences in the principal's office is interfering seriously with the development of the most efficient management.

As regards equipment for the instructional activity of the school, glaring shortcomings appear in the library and in part of the science department. All the more progressive communities of the country have come to realize that a trained librarian in the high school library is worth as much at least as any one teacher. Brookline High School apparently has the opportunity of entering into a co-operative arrangement with the town Public Library by which a member of the Library staff may be stationed in the high school library. Either in this way or by employing a competent school librarian independently, the School Committee ought to undertake the development and management of the high school library in such wise as to make it a vigorously educative factor in the work of the school. As to the science department it may be said that, whereas the equipment for Physics and Chemistry is probably ample, the instruction in Physical Geography seems to be proceeding in an almost purely bookish fashion with little or no illustrative material for making the subject concrete and relating it to the physiographical features of the Brookline region and to the life experiences of the pupils. Similarly in the Biology room one finds some very pretty and convenient equipment for the handling of notebooks, and a set of significantly clean and polished tables, but entirely too few signs of good facilities, adequate paraphernalia, and objective materials for making the study of living things a thoroughly realistic experience for the children.

PROGRAM OF STUDIES AND CURRICULUMS.

Brookline's policy in the matter of her high school program of studies and curriculums may be described as conservatively progressive. An examination of the official Courses of Study and the subject outlines submitted by the principal and the heads of departments shows that the offering of subjects in the five curriculums ("courses") is largely in line with academic tradition and the entrance requirements of the more conservative colleges; and yet there appear also some developments in the direction of the practice of communities noted for educational pioneering. Consequently, as the high school enrollment increases, one may expect to see many new subjects introduced and a number of additional curriculums formulated to accomplish defined educational ends. Just what the future developments should be, the developing needs of the Brookline community must determine; but the important thing to be realized now is that, although the high school may have hitherto presented as much in the way of curriculum offering as seemed necessary or expedient, that offering, judged by the best present-day standards, is neither very extensive nor notably liberal.

The first specific point to be considered in reference to the high school program and curriculums is the effect to follow from the establishment of the Junior High School this report recommends and the possible merging of the School of Practical Arts into the new intermediate school, if either of these steps should be taken. Obviously the new ninth grade in the proposed Junior High School would be made to preserve all the essential features of the present first year of all five high school curriculums. The new organization could, and doubtless would, be worked out so as also to improve the curricular articulation between the grades and Brookline High School, rather than produce any new disjointedness. An immediate improvement would be effected in the connection in French and in Latin. At present there is an awkward "optional French" in the College Preparatory Course, scheduled for two periods a week in the first year and three periods in the second year, for pupils who began French in the grammar grades, these two half-units serving to continue French from Grade IX and bring the

pupils up to the point where at the beginning of the present third high school year they may be classified with pupils who had simply one year of French in the high school itself at five periods per week. This awkward arrangement would be unnecessary, and might be at once discontinued, when a direct transition could be made from the Junior High School ninth grade to the first year of a three-year Senior High School, the new tenth grade corresponding to the present eleventh grade or second year of high school. Again, there is in Latin at present a special "beginning Latin" class offered in the high school first year for pupils who have not previously studied Latin; and, in order to have this group join the "regular" Latin pupils (those who had Latin in Grade IX) at the beginning of the second year, a double time allowance is put upon the subject, an arrangement that forces these "irregular" pupils to do practically two years of Latin in one year and that their first year in high school. This "Latin IV D" obviously constitutes a vigorous experience for those first year unfortunates who did not take Grade IX Latin or who have just come into Brookline, but who desire to study Latin in high school. Moreover, when the number of pupils presenting themselves to form this special Latin class is small, no class is organized (as happened in Septemer, 1916); and then follows the undesirable result that Latin cannot be begun in Brookline High School, even pupils in the General Course, preparing for normal school, being precluded from taking Latin. This point of awkwardness in the program of studies should be corrected; so that, whether or not a general reorganization to Junior and Senior High School plan is undertaken, pupils may, without the penalty of doing double time, begin Latin in the high school and have at least three years of elective Latin open to them under conditions made just as "regular" as is the offering of three years of German or French begun in the present second year.

As to the scope of the educational offering in the Brookline High School program of studies (the whole range of subjects, prescribed and elective), it may be said that, besides a limited amount of work in Art, Music, and Physical Training, the school affords opportunities for a number of year-courses in all seven of

the major fields of secondary school study, English, Foreign Language, Social Science, Natural Science, Mathematics, Commercial Branches and Manual Arts. The limitation of the work in physical education is, as noted elsewhere in this report, primarily due to the imperfect housing of the school and the lack of adequate gymnasium facilities. Moreover, it must be recorded that, although the school is not predominantly a college preparatory institution, as the growing importance of the General Course and the Commercial Course amply demonstrates, nevertheless the college influence is permitted to warp some of the work out of the line of development likely to be most beneficial to the non-college-preparatory pupils; for example, the course called "Junior Chemistry," which was "intended to correlate with Domestic Science and daily life," has been "forced to do college preparatory work." Again, in the course in Mathematics a large proportion of the time in the two upper years, especially in the third year, is given up to reviews upon college preparatory work and to quite frankly acknowledged coaching for the college entrance examinations to be taken at the end of the third and fourth years; so that desirable advances in the study of Mathematics, for example, into the field of Trigonometry and even the elements of Analytic Geometry (to gain, for one thing, a more perfect understanding of graph work), are prevented by this subservience to the colleges. Manifestly, at these points and at any other points of similar maladjustment, a readjustment should be effected so as, if possible, not to sacrifice the interests of any group of pupils, particularly if the needs of a larger number of non-college-bound pupils were neglected in favor of the demands of a smaller body of college preparatory pupils. Upon this whole question of the fulfillment of college entrance requirements, all New England and the East in general can learn much from the Middle West and the Far West in the way of educating the colleges up to the acceptance of any good high school graduation requirements.

In reference to the particular units of work in the various subjects offered through the four years, one notes for commendation the progressiveness shown in the revision of part of the offering in the Department of Social Science so as to emphasize Modern

History and the study of, or at least preparation for the study of, present-day problems; although certainly the new combined United States History and Civics should be given five periods a week instead of only four. Shortages, however, appear in this department, in that no Industrial History and no Economics are offered the pupils of the school except the Economics listed with Business Law in the Commercial Course; and it would seem also incumbent upon the Social Science Department to substitute Commercial and Economic Geography for the Physical Geography now prescribed in the second year of the Commercial Course. Another development worthy of commendation is the differentiation of content undertaken in certain subjects, for example, in English and in Natural Science, to meet the needs of different classes of pupils — "Commercial English" for the Commercial classes versus the traditional academic or college preparatory English, and General Course Physics versus the college preparatory Physics. On the other hand, it is disappointing to find no indication of differentiated treatment of the subject matter of first and second-year Mathematics, although the number of recitation classes in both Algebra and Geometry (five sections of each) is sufficient to afford ample opportunity for interesting differentiations here; for example, at least one section of each of these years in Mathematics might be devoted to something like the "composite" or "co-ordinated" Mathematics of the School of Education High School of the University of Chicago, now attracting much attention (compare also the work of Evans and Marsh in Boston), and such correlated Mathematics would seem to be particularly appropriate to the General Course — indeed, at least one unit of such Mathematics might with advantage be prescribed in that course, as will be shown later.

Other shortcomings of the Brookline High School program of studies, in comparison with the more progressive and more comprehensive programs found in corresponding schools elsewhere, appear in German, Community Civics, General Science, Physiology, and Latin. The school offers only three years of German alongside of four years of French; but there seems to be quite as much reason for four years of the one as of the other,

and, in fact, the opportunity to get four years of German ought to be afforded in the Technical Course and the Commercial Course, if in no others. Two new secondary subjects known as Community Civics and General Science are being introduced into many school programs, generally in the first year of a four-year high school or in the Junior High School; and Brookline may well consider adding both these to her secondary educational offering — the latter subject, indeed, General Science, may be made to serve admirably as an enlightening forerunner of the study of the special sciences of Biology, Physiography, Physics and Chemistry. The shortcoming in Physiology is seen in the circumstance that the only Physiology taught in the school consists of a minor part of the first-year Biology, a subject not listed in all the curriculums and occurring in part only as an elective where it is listed; yet Physiology should be an inseparable correlate of the instruction and practice in Physical Training given to all the pupils of the school. Finally, as to Latin, it may be asserted that Brookline High School offers both too much and too little Latin. A complete secondary course in Latin, covering four years, more or less, is now generally regarded as college preparatory work; and, consequently, a public high school need not make its Latin offering more extensive, and therefore more expensive, than the fulfillment of the college entrance assignment in Latin, usually only the beginners' book, Cæsar's "Gallic War" I-IV, six orations of Cicero, Virgil's "Aeneid" I-VI, and the four years of accompanying Grammar and Prose Composition. Brookline, however, in her five years of Latin, beginning with the present Grade IX, offers considerably more than the standard four-unit college entrance requirement in Latin, as the report of the head of the Classics Department clearly shows. On the other hand, it can be argued that the pupils have offered to them too little Latin: first, because, as was shown above, it is difficult and in some years impossible to begin Latin in Brookline High School; and second, because the school has not yet worked out a one-year or two-year non-college-preparatory course in "Latin for English," a highly enlightening form of Latin study to be sharply differentiated from the traditional Latin, defined in college

admission statements. Brookline High School could very readily undertake the development of this proposed special Latin, here called "Latin for English," and in doing so she would be creating a new and valuable addition to the subjects of her curriculums and at the same time be making a real contribution to secondary education.

So much having been said about the studies forming the whole program of the high school, the five organized curriculums, officially called "Courses of Study," must now receive consideration. These five curriculums, named the *College Preparatory Course*, the *College Technical Course*, the *Technical Course*, the *General Course* and the *Commercial Course*, represent the town's effort to guide the high school boys and girls through four years of well planned study to the outcomes of preparation for: first, successful admission to college (Courses I and II); second, skilled manual industry (Course III); third, admission to normal school or "entrance into life" (Course IV); and fourth, commercial pursuits (Course V). Obviously the first of these purposes is the most definite, the most surely attainable, and the least in need of comment in this report, so long as conditions in the matter of going to college remain as they now are, particularly in New England. If one wants to enter Harvard or "Tech," he must perforce fulfill the prescribed entrance requirement, whether or not the performance of that task constitutes a reasonable and educative experience; and the Brookline school authorities may be trusted to have Courses I and II always conforming to the Harvard and Technology prescriptions. Course III, the Technical Course, presents, since the great shift of pupils' elections in 1915, a puzzling situation, as was shown in a preceding section of this chapter; so that, unless the enrollment in this curriculum can be built up, the Technical Course might just as well disappear from the printed program, in correspondence with its disappearance from the school. On the other hand, as is recommended elsewhere in this report (cf. chapter on School of Practical Arts), the Technical curriculum might be taken over into the part of the proposed Junior High School that would absorb the School of Practical Arts.

Course V, the Commercial Course, may be examined from the points of view of (1) particular subjects pursued, (2) lines of advantageous development, and (3) arrangements to provide pupils with practical experience. As this is professedly a vocational curriculum, so understood and elected by the pupils, the list of subjects prescribed or offered electively as elements of a general education, alongside the specifically commercial branches, need not include subjects special to other lines of particular educational preparation and should include as many general culture subjects as can be conveniently presented. Applying this principle, one may make several such changes as Science or European History in place of the prescribed first-year Science, Geography or Modern History in place of the prescribed second-year Physical Geography, and English History or Science in place of the prescribed third-year History. In this connection, however, consideration may with advantage be given to the suggestion offered above, that Commercial Course pupils may derive more benefit from a year of General Science and a year of Commercial and Economic Geography than from the Biology and Physical Geography now prescribed for them. It is good to see in this curriculum the Algebra dropped down into the elective group of studies; and no harm, and perhaps some good would come from adding Geometry to the second-year electives. It is also a mark of high school progressiveness to see no foreign language prescribed for these pupils; but it would certainly improve the curriculum to offer German alongside French through all four years, and thus make possible a four-year course in German. As to the lines of advantageous development for the Commercial Course, one sees the beginnings of a desirable differentiation in the present third-year and fourth-year alternatives presented in "Advanced Bookkeeping and Banking or Stenography and Typewriting" and "Business Law and Economics or Stenography and Typewriting." With this as a point of departure, the curriculum should be developed, as the enrollment grows, into a threefold differentiation (possibly even three fairly distinct curriculums that might be named the Accounting, the Secretarial, and the Merchandising Courses). The time may

come, too, when the introduction of unified two-year curriculums (for example, the short Clerkship Course) may be demanded if a curriculum of this character is not provided in a Junior High School. As to arrangements for providing practical experience for Commercial Course pupils, it seems that little or nothing has been accomplished thus far. Yet this is just the direction in which something, even though not a great deal, needs to be done if these pupils are to be prepared to take positions with confidence and actual acquaintance with real work, as soon as they are graduated. Consequently, in the fourth year, if not earlier, "co-operative" arrangements should be worked out to place commercial seniors at actual part-time work in office, stores, or elsewhere, in order to provide them with the genuine experience they need to get. Much of good may accrue to some of these pupils from being placed right in the offices of the city school system itself, in the high school, in the larger elementary schools, and in the Superintendent's office; and at those posts they might render valuable assistance not only with correspondence but also with records, statistics, reports, and in the general improvement of the business side of school keeping in Brookline.

The General Course, Course IV, is in some respects, in Brookline and elsewhere, the most interesting curriculum of the school and the curriculum most fraught with possibilities for the personal awakening and the educational development of high school boys and girls. This curriculum, of course, should be advised for all pupils who enter high school without clearly defined purposes, and who therefore are to undergo here, consciously or unconsciously, with or without aid and guidance, more or less of a "self-discovery experience," more or less of a "prevocational try-out" even though mainly in academic lines. Consequently, this curriculum should be made as rich as possible in educative opportunities, while at the same time it is constructed upon principles, and controlled by a prescription of studies, justified by the best current educational philosophy. Examined from this point of view, Brookline's present General Course both merits commendation and requires some revision. The construction of the curriculum exemplifies the principle

of *concentration* in the requirement of four continuous years of work in three fields of study, with English as a *constant*; the principle of *distribution* in the requirement that the pupils' study through each year shall be distributed over four of the broad subject fields; and the principles of *election*, alongside of prescription, and attention to individual *interest* in the array of electives offered throughout the curriculum. Commendable and also distinctly progressive are the features of no *prescribed* foreign language and of solid attainments in Natural Science and Social Science. On the other hand, although the traditional Algebra and Geometry have been happily confined to the elective list, it is exceedingly questionable whether General Course pupils should be permitted to pass through high school without having taken some Mathematics. Here, therefore, is a place where the introduction of at least one year of the new "composite," "co-ordinated," or "correlated" Mathematics as an additional prescribed item may be strongly recommended; for axiom, formula, equation, theorem, proposition, proof, unknown quantity, negative number, variable, graph, and other similar concepts, and a definite appreciation of and some actual experience with the rigorous methods of secondary Mathematics, are elements of a liberal education that no high school graduate should have missed. In the matter of electives, also, the point can be made that the General Course should offer practically everything found in the whole program of studies except technical subjects leading to specific goals. Thus, for example, these pupils should have the opportunity of getting four years of German, Mathematics II and I (the Mathematics of years three and four), printing as a form of Manual Training or an art correlating with English, and by all means the elements of account keeping, even if a new unit different from the present Introductory Book-keeping has to be developed. Moreover, as the school grows, and new subjects are added to the program of studies, these may always with propriety appear somewhere in the General curriculum, just so long as they are meant to be elements of liberal education or instrumentalities for trying out pupils' abilities and aptitudes. The ultimate outcome of this process

will very likely be the expansion of the General Course, at least above the first year, into several more or less distinct curriculums, having differentiated objectives.

Finally, in reference to all five of the present formulated curriculums and any other "courses" that may be set up, it can be remarked that just as rapidly as there grows in the field of secondary teaching the conceptions of youth as the period for "finding one's self" and of the secondary school as society's principal organized agency for facilitating this self-discovery, so rapidly will become established in the minds of school officials, teachers, and parents, the notion that all curriculums, except those specifically vocational in character, should be regarded as suggestions rather than prescriptions and administered in no rigid and inflexible manner, but with full regard to the continuous readjustment of educational means to the developing and changing needs of adolescence.

High School Shop Work.

When the Brookline school authorities provided the splendid Manual Training equipment in the Manual Training High School, it was not anticipated that a diminishing number of boys each year would elect Manual Training courses. This, however, has proved to be the fact. In the fall of 1916 there were but three boys taking Forging, 10 Machine Shop Practice, 73 Mechanical Drawing, 18 boys and 16 girls Art Metal Work, 76 Cabinet Making, Wood Turning, Pattern Making, and Foundry. The total number of boys taking Manual Training courses is about 117. This is a small proportion of the boys attending the high school and, according to the statements of the shop instructors, a much smaller number than formerly took Manual Training. The upper classes have diminished in larger proportion than have the lower classes. The drawings on pages 384 and 385 show the extent to which the shops are being used by the high school and the School of Practical Arts.

The high school is appealing to the College Preparatory and Commercial pupils, but the boy who wants industrial training of general or of specific type is not attending the high school. Two

reasons suggest themselves. First, aside from commercial training, the high school is laying special emphasis on college preparation and not upon finishing courses for pupils who must soon enter employment. Second, the Manual Training courses do not appeal to the boy as adequate industrial training.

The aim of the shop courses is decidedly cultural and informational. Practically no evidence of industrial training is to be found. With one or two exceptions, the work is taught on the formal exercise basis. This type of work will not satisfy the boy who is looking for industrial training.

If the shop equipment in the high school is to serve a larger group than it does at present, two things must be done. Industrial work of a worth-while type should be given to the pupils in the grades below the high school, and more practical and more varied shop courses should be introduced in the high school. The pupils who enter the high school at present have not had the sort of contact with practical shop activities that would give them an appreciation of this kind of work. As pointed out in the discussion on the School of Practical Arts, the organization of a Junior High School would make it possible for a large group of boys to become interested in mechanical processes. The Practical Arts Course in the Junior High School would be continued in the Senior High School with general or specific trade training in the first part of the course and technical training in the last two years. This plan would give practical training to the boy who cannot remain for the completion of the course. The boy who does complete the course would have the further advantage of a technical training based on the previous industrial training.

Practical shop courses would involve quantity production turned out on an industrial basis. This would apply to the wood-working, metal working, printing, and other trades that may be introduced. The need for a large forge shop is questionable. It is recommended that the greater part of the equipment be disposed of and the remainder be placed with the machine shop equipment. In the opinion of the committee, the forge work that will function to best advantage could be taught in the ma-

chine shop. If a few modifications were made, the machine equipment might replace part of the forge equipment in the present forge shop, or a small part of the forge equipment could be installed in the present machine shop. The foundry practice could be taught to best advantage during the Pattern Making course rather than as a separate unit following this course. A small part of the present foundry equipment would answer the purpose. If the remainder of the foundry equipment should be placed in the Junior High School, then, by making a few simple changes in the room, the Pattern Making shop could be located in the present foundry. These suggestions are made with the aim of grouping the processes in proper relation to each other, and at the same time to provide space for the introduction of additional activities. These recommendations are similar to those made in connection with the School of Practical Arts.

ORGANIZATION AND MANAGEMENT.

The discussion of the organization and management of Brookline High School may, for the purposes of this report, be handled under the heads of: The relations of principal and faculty, the departmental organization, the size and composition of classes, the general discipline of the school, the assignments of work to teachers, and the organization as affecting high school costs.

As far as the observations of the members of the Survey Committee warrant a judgment upon the relations, personal and professional, subsisting between the principal and his faculty and among the members of the faculty, these relations may be characterized as excellent. Nothing was found, or presented by any one connected with the school, to indicate any lack of good *esprit de corps*. The five regularly appointed heads of departments act as official intermediaries between the head master and the assistant teachers in the definitely organized departments; and the head master himself holds conferences of, and issues instructions to, the groups of teachers in subject fields not officially organized into departments. Furthermore, all the teachers, individually or in groups, have at all times easy access not only to their heads of departments but also to the

head master, for consultation, advice, and assistance; and it is reported that such individual and group conferences are frequently held, especially for the consideration of particular problems — for example, early in the year a conference of the teachers of first-year classes will be called. On the other hand, the policy of dispensing with general faculty meetings is quite open to question. There is, indeed, one faculty conference each year according to the principal's report; when, on the day before the opening in September, a full faculty meeting is called to present the organization of the school for the year and distribute to the teachers their individual program cards. But that other faculty meetings through the year, particularly if held at regular intervals (as monthly) should be found useless and boring to all in attendance is a possible but by no means a necessary consequence. One of the greatest problems in high school administration, as soon as the school grows to a size requiring more than half a dozen teachers, is the problem of unifying the faculty, of preventing the teachers from becoming relatively narrow, and almost absolutely isolated subject specialists; and under the departmental organization of the large high school there is need of special effort to keep the faculty together for just that teamwork which the individual teacher is prone to neglect even while preaching the observance of it to the pupils. The high school faculty meeting can be made to promote the unifying of the faculty (as a recent significant Cincinnati report sets forth) by creating in the teachers a lively consciousness of common general aims in the whole work of the school; by showing how every teacher can have some participation in the general management of the school; by having all teachers get a knowledge of, and an interest in, each other's work, by setting up lines of direct co-operation in instruction and classroom government; by bringing about the employment in common of some features of good technique of the recitation; and by being, therefore, developed eventually from "routine faculty meetings" into important professional conferences.

In the matter of the departmental organization of the school, appropriate questions are: What determines the formal designa-

tion of a department and the appointment of an official head of department; what present heads of departments, if any, are unnecessary and, on the contrary, what departments should be formally organized; and what are the duties and activities of the heads of departments as such? The "Rules of the School Committee" (1914) give no directions for organizing a high school department although as conditions in Brookline High School now are it might be proper to have a rule to the effect that a department may be organized when, and continued as long as, the number of teachers in a given subject or field of work is not fewer than three and the number of periods of class instruction in this subject or field is not under 60 periods per week. At present there are nine subjects or subject fields employing three or more teachers each, as follows: English, six teachers; Modern Languages, five; Natural Science, four; Mathematics, four; Commercial Branches, four; Social Science, three; Classical Languages, three; Manual Arts, three; and Household Arts, three. Of these, five are officially organized departments with departmental heads, namely: English, Natural Science, Mathematics, Commercial Branches, Classics; so that, while the departmental group involving next to the largest number of teachers, Modern Languages, with five teachers, is unorganized, one of those at the lower end of the list, the three-teacher groups, is organized as the Classical Language Department. Very likely there was a time when the amount of work in the Classics was sufficient to employ more than three teachers. Now, however, whether or not the continuance of the Classics Department should set up a presumption that also Social Science, Manual Arts, and Domestic Arts Departments ought to be officially formed, nevertheless it is certainly a fact that a Modern Language Department could be organized with advantage to the school; and it may be said that here, with five teachers' work in three languages (French, German, and Spanish) to be supervised, there is greater need of an official head of department than in the Classics Department, now involving but two languages (with Greek apparently dying out) and the teaching time of only two and a half teachers. Furthermore, this judgment is reinforced by the showing in the classification tables given below,

where one sees 28 and 25 recitation classes in French, German, and Spanish, and only 13 and 11 classes in Latin and Greek, indicating a correspondingly greater total number of pupils pursuing the Modern Languages.

The duties and activities of the heads of departments as such were learned by requesting each head of department to submit a written statement. The first statement received begins with the frank declaration: "The situation is anomalous. So far as I am aware my duties have never been defined by any one in authority." This is an acknowledgment suggesting at once the recommendation that some definition of the duties of heads of departments be undertaken, perhaps by the heads themselves in conference with the head master and the Superintendent. On the other hand, the remainder of the statement from which the foregoing quotation comes and the statements of the other four heads of departments all indicate that some very good work in the direction of departmental organization and management and the unification of instruction is being done. In reply, however, to the specific request, "Please tell what supervision of instruction you conduct," the answers show that not so much in this direction is accomplished as would be advantageous and as might properly be expected if the school schedule were arranged to afford heads of departments more periods for supervisory visitation in the classrooms of the masters and assistants than are now available. Judicious supervisory visiting by a sympathetic but keen-sighted head of department should be made a prime factor in the improvement of teachers after appointment, especially in the cases of the younger and less experienced teachers.

Under the head of size and composition of classes, *i.e.*, recitation groups, the first item of interest is the number of pupils per teacher for the school as a whole. Upon this point the annual school reports furnished figures that place Brookline in striking and most favorable contrast with other cities. This is, however, a fact so well known that it has been made the subject of published comment outside of Brookline; for example, three years ago the Superintendent of Newton, Mass., presented in his annual report (February, 1914) a table in which Brookline, in

the matter of number of high school pupils per teacher, was set off in contrast with 33 other Massachusetts cities, the Brookline figure being 20.52, whereas the figures for the other cities ranged from 22.07 to 35.25 with an average of 27.76 pupils to the teacher. From the Brookline reports the following figures were obtained: High school average number of pupils per teacher based upon "average membership" — 1910, 19; 1911, 20; 1912, 20; 1913, 20; 1914, 22; 1915, 24; and 1916 (for the school year 1915-16) 25.4 pupils per teacher. It must be pointed out, moreover, that probably the last figures given should in strictness be lower than they are. Thus the 25.4 for 1916 is obtained by dividing the average high school membership, 686.1 pupils, by 27 as the number of teachers, this latter figure being the number of listed high school teachers, 31, less four that are counted out as "special teachers," because their work is in the "special" fields and their time is given partly to Practical Arts pupils. But this seems not a sufficient reason for reducing the teacher divisor in this way: so that, if 31 is taken as the divisor, the quotient for average of pupils per teacher drops to 22.1; and if, on the other hand, because a number of the high school teachers have Practical Arts pupils for certain periods of the week, the two schools should be considered as one for the present computation, we should have an average membership of 760.3 pupils ($686.1 + 74.2$) and a teacher divisor of 38 ($31 + 7$) producing an average of pupils per teacher of 20 for the two secondary schools together—or 21.1 if the two principals are left uncounted. In any case, however, to be able and willing to maintain so low an average of pupils to the teacher is very exceptional in public high school administration and greatly to the credit of Brookline. Whether or not the present ratio is unnecessarily and expensively low will appear on considering in detail the classification in the high school through the past two years.

The following tables present the class (*i.e.*, recitation section) organization of the school last year and this year, excepting the subjects of Art, Physical Training, and Music, that do not fit into this tabulation.

HIGH SCHOOL CLASSIFICATION OF 1915-16.
Number of Recitation Classes of the Various Sizes.

<i>Pupils in a Class</i>	4	5	6	9	10	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	35	36	38
<i>Subjects</i>																														
English.....											1	1	1	1	3	2	3	3	3	1		1	1	5	2		1			1
Social Science.....														1	1	1	1	2	2			3	2	1	1				1	
Mathematics.....											1	2		1	1	1	1	1	2					1	2	2	1			
Natural Science.....											1	1		3	1	1	3	2	3	1			1	1		1				
Latin.....											2			4			1													
Greek.....	1	1	1																											
French.....				1							1	1		1	5	1	3	1	1	2		1	1	1		1				
German.....					1						1	1		2		1					1									
Com. Branches.....												1	1	1	1		1													
Domestic Science.....												1																		
Total classes of each size.....	1	1	1	1	2	3	1	2	6	5	6	4	4	14	10	4	15	8	6			5	4	8	7	4	1	1	1	1

Total classes 128. Middle 50 per cent of the classes is found in the range of 19 to 26 pupils.
 (Table prepared by the head master in June, 1916.)

HIGH SCHOOL CLASSIFICATION OF 1916-17. Number of Recitation Classes of the Various Sizes.

Pupils in a Class	Proposed Standard																												Total Classes in Subjects	No. Below 20 Pupils	No. With 20 to 28 Pupils	No. Above 28 Pupils	Per cent Below 20	Per cent Above 28			
	3	5	6	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	33	34							46		
Subjects																																					
English.....								1				1	2	2	1	1	6	2	2	1	2	1	1	2	1	3	...	...	...	...	30	8	18	4		26.7	13.3
Social Science.....									1			1	...	2	2	1	2	2	1	...	1	1	...	1	1	...	1	...	...	13	4	10	2		25.0	12.5	
Mathematics.....										1		1	...	1	2	...	...	...	2	1	2	2	1	1	...	...	...	1	...	14	2	10	2		14.3	14.3	
Natural Sci.....								1		2	1	1	2	...	1	2	1	2	1	...	1	1	1	...	...	...	...	...	...	17	7	10	0		41.2	0	
Latin.....															2	...	1	4	...	1	...	1	...	...	...	...	...	...	9	0	9	0		0	0		
Greek.....				1	1																								2	2	0	0		100	0		
French.....								1				1	2	1	2	2	...	3	2	2	1	...	...	...	1	...	...	...	18	4	13	1		22.2	5.6		
German.....					1	1						1	1	...	...	...	...	1	1	...	...	...	...	...	...	...	...	...	6	4	2	0		66.6	0		
Spanish.....										1																			1	1	0	0		100	0		
Com. Branch.....			1					2	1			1	1	1	2	...	1	...	...	...	...	...	...	...	...	...	...	...	1	11	5	5	1		45.5	9.1	
Man. Train.....	1	1						1	2			1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	7	6	1	0		85.7	0		
Mech. Draw.....	1	1						1	2	1		1	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	7	6	1	0		85.7	0		
Dom. Science.....										1		1	...	...	...	2	...	1	...	...	...	...	...	...	...	...	...	...	4	3	1	0		75.0	0		
Total of each size....	2	3	2	1	1	2	5	6	5	5	4	8	6	10	13	12	6	13	7	7	6	6	2	4	1	1	1	1	142	52	80	10		36.6	7.0		

Total classes, 142. Middle 50% of the classes is found in the range of 17 to 24 pupils.

(Data furnished by head master, as of November 1, 1916.)

These tables exhibit the exceptionally small number of pupils to the class that prevails in Brookline High School. In 1915-16 there were so many classes with fewer than 20 pupils that the middle 50 per cent of all the classes in the school showed an enrollment range of 19 to 26 pupils. Again, in 1916-17 the small classes are so numerous that the middle 50 per cent is found in the range of 17 to 24 pupils; and there are no less than two dozen classes with fewer than 15 pupils each. Of course it is well understood that in a school offering a number of differentiated curriculums some classes, particularly in the two upper years, are bound to be small; yet it is equally well known that the most effective recitation work will not appear in very small classes, and, moreover, by no means are all the smaller classes here found in the last two years of the school, as the original data clearly demonstrate. What should be regarded as the proper size of a recitation class depends somewhat upon circumstances, including the character of the study or exercise concerned; so that a principal will often feel justified in making, for example, smaller sections in shop or laboratory work than in such academic, "bookish" work as History or Mathematics or Latin. The prevailing opinion, however, upon this matter sets a standard for public high school classes decidedly above the dominant sizes of classes in Brookline High School; often the range from 25 to 30 pupils to the class is advocated; and in certain published reports classes of 28 to 35 pupils are approved as reasonable and not too large for effective instruction when in the hands of good teachers. Nevertheless, on the assumption that Brookline is abundantly able and altogether willing to do better by her youth than most cities can do, it may be here recommended that Brookline assume as her standard for high school recitation classes a range of 20 to 28 pupils. This proposed standard is applied above in the table for 1916-17; where the classes falling within the standard are graphically blocked off, and the final columns of the tabulation present the number and per cent of classes dropping below 20 pupils and running above 28 pupils. These last columns point out the particular subject fields in which special effort should be made to reduce, and eliminate altogether when possible and not

pedagogically inadvisable, the numerous under-sized classes (52 in all, 36.6 per cent) and the relatively few over-sized classes (10 only, seven per cent); and, in proportion as success attends the reduction of the number of these under-sized classes, the school can be made to provide, to some extent at least, for an increased enrollment without the appointment of additional teachers. Apparently, for example, it would be quite as feasible to double up the three-pupil and five-pupil classes in Manual Training and Mechanical Drawing as it was to effect the corresponding consolidation in Domestic Science that has been made in the class designated "Domestic Science I and II."

An examination of the composition and character of the recitation classes discloses a mode of classifying pupils that presents both an advantageous and disadvantageous aspect. There is a manifest tendency, amounting to a principle of organization for the school, to group pupils into classes according to the curriculums, or courses, they are pursuing. This is, in part, an inevitable and quite desirable arrangement, particularly in the more special and technical classes of the school program; thus, only College Preparatory pupils are to be expected in the class in "College Review History" and only Commercial Course pupils are expected in the class in "Business Law." On the other hand, when in the subjects of a more general and broadly cultural character as is most of the English and History, especially that of the first two years (where pupils are new to the school and are in the various courses with less finality of decision than they feel in the third and fourth years), there is set up a grouping of pupils in recitation sections strictly according to the curriculums of their enrollment, an undemocratic spirit with more or less of social stratification may be introduced or fostered by this classification. In the present year's classification, for example, in first-year English there are 10 recitation classes, but they fall distinctly into five groups according to the curriculums of the school: three College Preparatory classes, one College Technical class, one Technical Course class, two General Course classes, and three Commercial Course classes. Again, throughout the organization and management of the school there is apparent a certain aversion

to the mixing of high school pupils and Practical Arts pupils even in subjects common to the curriculums of both the interlocking schools, as in Manual Training recitations and shop work, in Commercial Branches, and in Domestic Science. Evidently, existing arrangements might promote social education of the wrong sort for the best life in the American democracy; and, in addition, this mode of classification doubtless stands responsible for some of the under-sized sections through the school, as one finds right here in the English classes the College Technical division having but 19 pupils and the Technical only 11. Furthermore, classification according to the curriculums of the pupils when extended to the general subjects of the program produces segregation by sex to an extent that may be neither necessary nor desirable for the school, as is seen perhaps in the present English classes of boys only and a Physics class composed wholly of girls. Just one thing — but this may become a very important consideration — may be offered in justification for the principle of thoroughgoing classification according to curriculums: that is, the opportunity thus afforded for the working out of desirable differentiations in subject matter and method, even in the more general (versus the special and technical) subjects, in order to adapt the school more perfectly to the varying needs of the pupils; and in certain directions the Brookline faculty are plainly at work upon such differentiations as appear, for example, in the development of "Business English" in contrast with the traditional literary, historical, even esoteric English of the standard college entrance requirements.

All this study of the composition of classes leads, finally, to the question of co-education in Brookline High School. Upon this somewhat mooted question the prevailing practice in American public education, as is well known, favors, even where no necessity exists, co-education rather than segregation through the adolescent years as well as in childhood; and certainly much is to be said for the proposition that the way to get an adult citizenship of two sexes living in right relations is to bring up the two sexes of youth together, educating them along the way into that right relationship — especially as any enforced and more or less

artificial school segregation stands in striking contrast with the natural and inevitable informal co-education going on all the time in the home, on the street, in the church, and everywhere else. Specifically for Brookline it can be asserted that in the high school inspection made for this report nothing was found to indicate any unwholesome condition arising out of the co-education in the school; so that it is probably true in Brookline, as it certainly often is elsewhere, that at bottom motives other than anxiety over the possible deterioration of the character and conduct of youth under co-education in public high schools dictate in most cases the transfer of boys and girls from these schools to other institutions.

The general discipline of the school is undoubtedly good, and the relations existing between pupils and teachers appear to be altogether what they should be — except in one case of which the head master is fully aware. In one or two other cases junior teachers of the faculty need some advice and assistance toward the development of strength and resourcefulness in class management, for example, in the supervision of large groups during study periods; but this is always to be expected in a large school. Excepting the case of disciplinary weakness just alluded to, only in a single instance during visits to all the classrooms while recitations were in progress did any incident occur exhibiting improper speech or behavior from a pupil to a teacher; and upon that occasion the teacher met the little outbreak of adolescent “contrariness” with a quiet firmness that indicated admirable poise and self-control. There is, however, one habit prevalent in the school that is distinctly unpleasant to the visitor and seemingly discourteous to the teachers; this is the practice pupils follow in rising and leaving the recitation rooms, often hastily, upon the stroke of the gong at the end of periods without waiting for any word or signal of dismissal from the teacher — this unceremonious exit occurring sometimes even while the teacher was in the act of giving out the assignment for the next day’s lesson. This undesirable habit could be readily corrected; and indeed it would probably disappear automatically as soon as a five-minute warning bell, to signal the approaching close of the period,

is introduced, a mechanical aid in school management found generally in high schools and here recommended for Brookline. Another recommendation, affecting the interests of the girls in particular, is that the most suitable woman member of the faculty be officially appointed as Dean of Girls, or with some similar appropriate title, to advise with the girls and guide and instruct them in matters of a personal and hygienic character not easily to be handled by a man principal. Finally, it should be reported that although no fire drill was called for during the inspection of the school, the questions asked concerning the fire drills received answers suggesting that these drills are perhaps not conducted with all the seriousness they should invariably be given, and not with, among other features, that approach to precision of movement and comparative silence (to permit of the easy and rapid issuance of emergency instructions in case of need) which could and should be exacted; in short, one suspects that the fire drill in Brookline High School is not enough unlike the recurring exchange of classes and the ordinary daily dismissal of the school with their attendant freedom of movement and speech.

The assignments of work to the teachers of a high school faculty can be studied with reference to the subjects taught, the number of periods per week of actual class instruction in each teacher's program, the number of periods of study room supervision given the teacher, the number of "free" periods remaining, the total of "pupil-periods" per week carried, and the "extra-curricular" duties assigned each teacher. All six items are displayed for Brookline High School in the following table, which gives the assignments of the whole faculty, excepting the head master and the "special teachers" of Music, Needlework, Physical Training, and one part-time teacher of Domestic Science.

HIGH SCHOOL TEACHERS' ASSIGNMENTS, 1916-17.

Individual Teachers	Subjects Taught	Periods of Instruction Per Week	Periods of Study Supervision Per Week	Remaining "Free" Periods	Total "Pupil-Periods" Per Week		"Extra-Curricular" Assignments Reported	
					Men	Women	Men	Women
1 m	Modern Languages	20	4	6	400	...	Yes	....
*2	English	20	4	6	...	532	....	Yes
3	English	20	6	4	...	404	....	Yes
4	English	20	6	4	...	412	....	Yes
5	English	20	7	3	...	440	....	....
6	English	20	7	3	...	416	....	Yes
7	English	20	8	2	...	500	....	Yes
8	Latin-Mathematics	20	8	2	...	304+	....	....
9 m	Commercial-Mathematics	21	6	3	361	...	Yes	....
10 m	Manual Training	22	0	8	206	...	....	....
11	French	22	3	5	...	497	....	Yes
12	History	22	5	3	...	456	....	....
13	French	23	3	4	...	578	....	....
14	Mathematics	23	4	3	...	638	....	....
*15 m	Mathematics	23	4	3	513	...	Yes	....

(Data from teachers' individual program cards, giving conditions about November 1, 1916.)

HIGH SCHOOL TEACHERS' ASSIGNMENTS, 1916-17 — Continued.

<i>Individual Teachers</i>	<i>Subjects Taught</i>	<i>Periods of Instruction Per Week</i>	<i>Periods of Study Supervision Per Week</i>	<i>Remaining "Free" Periods</i>	<i>Total "Pupil-Periods" Per Week</i>		<i>"Extra-Curricular" Assignments Reported</i>	
					<i>Men</i>	<i>Women</i>	<i>Men</i>	<i>Women</i>
16 m	Manual Training	24	0	6	380	...	....	....
*17 m	Science	24	1	5	469	...	....	....
18	Science	24	2	4	...	504	....	....
*19 m	Commercial	24	3	3	399	...	Yes	....
20	History	24	3	3	...	564	....	Yes
21	History-Science	24	3	3	...	568	....	Yes
22	Modern Languages	25	0	5	...	401	....	....
23	Commercial	25	0	5	...	365	....	....
*24 m	Latin	25	1	4	540	...	Yes	....
25	French	25	2	3	...	485	....	....
26 m	Latin-Greek	25	3	2	445	...	Yes	....
27	Science	26	1	3	...	478	....	Yes
28 m	Manual Arts	28	0	2	476	...	....	....
29	Commercial	29	0	1	...	679	....	....
30	Art	30	0	0	491	...	....	....

Here the 30 teachers are listed in an ascending order according to the combination of their instruction periods and study class periods. The starred numbers represent the five heads of departments, and the letter M designates the men of the faculty. The figures for "pupil-periods" of work per week represent instruction entirely, and exclude study room supervision. The plus mark after the number 304 in the line for Teacher 8 shows that this teacher has in addition to her regular classes a number of added pupil periods of instruction each week in seven periods devoted to special help work with fluctuating groups of backward pupils. The column of "extra-curricular" assignments records only the fact of such duties or services being *reported*; some extra-curricular service for the school may have been missed. And doubtless there is needed in Brookline no explanation that "free" periods in a large high school do not mean periods of idleness for teachers.

It is at once apparent that assignments of 20 to 25 periods of instruction per week represent the norm for the school, and that teachers of English are given not more than 20 periods; and both these items of organization are in conformity with the best practice elsewhere on the basis of a 30-period schedule. It may be questioned whether heads of departments should be tied down to study room supervision if this can be avoided, particularly when their actual teaching exceeds 20 periods; for presumably their time could be more advantageously spent in administrative and supervisory service. It seems not good, moreover, that the head of the department of English should have the heaviest English assignment and one of the heaviest assignments of the school, in terms of pupil-periods per week, when she has not only one of the subject fields most in need of continuous supervision and revision but also a greater number of assistant teachers than are found in any other department. It is commendable that at least half the faculty render extra-curricular service representing a considerable variety of teacher activities for the good of the school, ranging from care of supplies and keeping the book records to guidance of literary and debating clubs and social functions and supervision of the school

athletics; and the valuable effects derivable from these latter activities, particularly in the direction of wholesome social education and training for good citizenship, are so patent that the drawing of all the remaining members of the faculty into some participation in this extra-curricular service is strongly recommended.

The most significant feature, however, of the table of assignments presented above is the quantity of weekly instruction given by the several teachers, here recorded in pupil-periods per week. A "pupil-period" means the instruction of one pupil through one period; so that the teaching of a class of 25 pupils once a day, five periods a week, would amount to 125 pupil-periods; and an assignment of five such classes, involving 25 periods of class teaching per week, would produce an "instructional load" of 625 pupil-periods per week. Now, just as might have been expected from the showing made in the classification tables already discussed, the Brookline High School instructional assignments, owing chiefly to the many small classes in the school organization, are decidedly lighter than the assignments ordinarily given teachers in public high school administration in cities. This aspect of the school is set forth more clearly in the following table:

DEPARTMENTAL GROUPING OF TEACHERS' "INSTRUCTIONAL LOADS."

<i>Range of Pupil- Periods per Week</i>	<i>English</i>	<i>Social Science</i>	<i>Mathe- matics</i>	<i>Natural Science</i>	<i>Classics</i>	<i>Modern Lang.</i>	<i>Com- mercial</i>	<i>Manual Arts</i>	<i>Art</i>	<i>Mixed</i>	<i>No. of Assign- ments in Each Range</i>
200 to 299	....	....	....	....	....	....	....	206	....	....	1
300 to 399	....	....	....	....	....	....	365 399	380	....	304+ 361	5
400 to 499	404 412 416 440	456	....	469 478	445	400 401 485 497	....	476	491	....	14
500 to 599	500 532	564	513	504	540	578	....	....	....	568	8
600 to 699	....	....	638	....	....	....	679	....	....	....	2
Total of assign- ments	6	2	2	3	2	5	3	3	1	3	30

Here it is seen that the greatest number of assignments in any range (14) falls in the 400 to 500 pupil-period range; and that more than two-thirds of all the assignments (14+8) fall in the range of 400 to 600 pupil-periods per week. In other cities, on the contrary, it is common to regard assignments very much in excess of 600 pupil-periods per week as reasonable and normal; thus a standard range of 660 to 720 pupil-periods per week has been advocated; and one recent study of high school organization sets up a standard of 792 pupil-periods per week for men (24 periods of teaching with classes averaging 33 pupils) and 726 pupil-periods per week for women (22 periods with classes averaging 33 pupils) as not unreasonable under the relatively high salaries of the larger and better cities. Putting aside, however, these figures as indicative of a quality of class work that Brookline can and will surpass, and reverting to the proposed standard of 20 to 28 pupils for the size of classes in Brookline High School, one arrives at a standard range of 500 to 700 pupil-periods per week, this amount being obtained by taking, first, 20 periods of instruction with classes averaging 25 pupils each (or 25 periods with classes averaging 20 pupils) and, second, 25 periods of instruction with classes averaging 28 pupils each. Under this standard any assignments in the 400 to 500 pupil-period range, now almost the rule, ought to be exceptional and specifically justified; and 400 pupil-periods (*i.e.*, 20 periods of instruction with classes averaging 20 pupils) should become the absolute minimum assignment. At present, as the foregoing table shows, just one-third of the faculty assignments (8+2) come up to the proposed standard of 500 to 700 pupil-periods of instruction per week.

The final topic set for consideration in this section is the effect of the school organization on high school costs in Brookline. This matter requires but brief comment here, because of the extended treatment of expenditures presented in the chapter on the School Finances, and yet mention may be made of the leaving of certain subjects in the program of studies, of the small classes and the low ratio of pupils per teacher in the school, and of the teachers' assignments in pupil-periods per week. It is

evident that the continuance of Greek, and of any other subject in which only very small recitation classes can be made up, constitutes a relatively expensive item in the budget of the school, and a factor operating to raise and keep high the per capita cost. Thus, in the case of Greek, with two very small classes in the school now, of five and six pupils respectively, the subject occupies two-fifths of the teaching time (10 periods out of 25) of a maximum-salaried master (\$2500); so that manifestly the cost of Greek instruction in Brookline is very high at present — but, of course, with the community rests the decision whether this subject or any other similarly unpopular subject, for the sake of the pupils electing it and their future citizenship and personal culture, is an important enough element in the offering of public education to be worth all it costs. Similarly, throughout the school the many small classes in various subjects (52 with fewer than 20 pupils, 36.6 per cent of all the recitation sections) with the resulting unnecessarily low ratio of pupils per teacher, as has been shown, form an important element in the high costs of the school; and the reduction of the number of such classes, by the introduction of the proposed class standard of 20 to 28 pupils, would certainly reduce the per capita cost of instruction in the high school without any significant impairment of efficiency, with, indeed, a sure enhancement of educative effects in certain subjects where now the low class membership precludes enthusiasm, lively discussion, or stimulating emulation. And to accomplish the elimination of very small classes in some cases, as was suggested for the upper classes in Manual Training and Mechanical Drawing, consolidation of grades with yearly alternation of two units of work might be effected. Again, the high school costs would be materially affected by raising the teachers' assignments to the proposed standard of 500 to 700 pupil-periods per week. From now on, therefore, by organizing the school with more careful attention than perhaps has been paid heretofore to cost accounting upon unpopular subjects, under-sized classes, and over-light assignments to teachers, the per capita expenditure may be reduced; and for a while at least it may be expected that certainly some, and perhaps a considerable, increase of enrollment can be handled without the appointment of additional teachers.

TEACHERS AND TEACHING.

When engaged in studying the personnel of a high school faculty, one is concerned with the policy pursued in the selection and appointment of teachers, the standards followed in the matter of candidates' scholastic training and prior experience, the length of service the members of the staff have given in the school studied, the salary schedule in effect and the actual salaries present incumbents are receiving, the personality of the teachers as seen in the classroom and the quality of their instruction.

In the matter of securing high school teachers, Brookline appears to be pursuing the altogether enlightened policy of giving to the Superintendent of Schools complete freedom to go out and get for each vacancy or new position created, "the best available teachers." So long as the Superintendent retains the confidence of the School Committee, and shows in classroom results the soundness of his judgment in the selection of new teachers, he can rely upon securing the prompt appointment of every candidate he nominates. This disposition of the Brookline School Committee to leave practically altogether to the Superintendent the extremely important and wholly professional duty of securing additions to the teaching corps is worthy of especial comment and the heartiest commendation, both because it is so completely in line with sound administrative principles, and because a very different attitude on the part of a school board, or of certain members of the board, is by no means uncommon. As a result, there is now in Brookline High School a faculty that appears distinctly superior to the average city high school faculty.

In one respect, however, a change from the present status in the Brookline faculty may be recommended: the proportion of men to women should be made more nearly equal in such a large co-educational school. The faculty roll of 1916-17 shows, besides the head master, only 10 men as against 20 women; and when the present exchange teacher in the school, a man, is replaced by the return of the regular teacher, a woman, now on exchange assignment in another city, the ratio of men to women will fall below one-third. It would seem that the number of men teachers in Brookline High School could be easily in-

creased if a distinct effort toward this end were put forth; and it may be regarded as particularly undesirable to have no men at all teaching in certain departments, as in the department of English.

The details of the high school teachers' scholastic training, previous experience, service in Brookline, and salaries can best be shown in tabular form. The following table sets forth this information as accurately as it could be obtained from the teachers' written reports, a few of which were not absolutely clear on every point. Scholastic training was readily classified as "college graduation," "normal graduation," or "special preparation" that consisted of partial college courses and other extended study or specialized work in technical institutions directly in the line of the teacher's specialty. The individual members of the staff are here denoted by numerals in the same way as in the table of High School Teachers' Assignments (cf. the foregoing section), with the addition of "H. M." for the head master and "No. 31" for the teacher on leave of absence this year on an exchange-assignment in another city, "No. 1" being the exchange teacher in Brookline. The count of years of teaching is brought up to the end of the first semester of the current academic year, one or two odd months here and there being disregarded. The seven years in the third column for Teacher 11 includes the two years of a former period of service in Brookline itself.

HIGH SCHOOL FACULTY, 1916-17.

<i>Individual Teachers</i>	<i>Scholastic Training</i>	<i>Years Experience before BROOKLINE</i>	<i>Years Service in BROOKLINE</i>	<i>Total Years Experience</i>	<i>Salaries in 1916-17</i>
H. M.	College	14.0	3.5	17.5	\$3800
1 m.	College	6.5	.5	7.0	1500
*2	College	4.0	12.5	16.5	1900
3	College	7.0	2.5	9.5	1300
4	College	3.0	2.5	5.5	1000
5	Special	3.5	.5	4.0	1050
6	College	1.5	7.0	8.5	1500
7	Special	6.5	8.0	14.5	1300
8	College	8.0	2.5	10.5	1200
9 m.	College	4.0	7.5	11.5	1750
10 m.	Special	2.0	21.5	23.5	2500
11	College	7.0	1.5	8.5	1500
12	College	2.0	19.0	21.0	1500
13	College	5.0	1.5	6.5	1050
14	College	0.0	12.5	12.5	1350
*15 m.	College	15.0	16.0	31.0	2800
16 m.	Special	4.0	18.5	22.5	2200
*17 m.	College	5.0	26.5	31.5	2800
18	College	11.0	9.5	20.5	1500
*19 m.	Normal	20.0	5.0	25.0	2600
20	College	4.0	6.0	10.0	1450
21	College	1.0	.5	1.5	1050
22	College	8.0	11.5	19.5	1500
23	Special	9.0	8.5	17.5	1400
*24 m.	College	17.0	16.5	33.5	2800
25	College	4.0	2.5	6.5	1150
26	College	5.0	16.5	21.5	2500
27	Normal	5.0	16.5	21.5	1500
28 m.	Normal	12.0	11.0	23.0	2500
29	College	4.0	2.5	6.5	1050
30	Normal	17.0	3.5	20.5	1450
31	College	1.0	21.5	22.5	1500

Here it is shown that but five teachers of the faculty (four appointed eight to 21 years ago) are not college or normal graduates, having had only partial college courses or merely special training in the field of their instruction; that four are normal school graduates with (as their records show) considerable additional special training; and that the remaining 23 are all college graduates, holding in six cases both the Bachelor's and the Master's degrees and in one case the degree of Doctor of Philosophy in addition. The roll of the colleges from which these teachers were graduated includes such high-grade institutions as Brown, Harvard, Mount Holyoke, Radcliffe, Smith, University of California, Vassar, Wellesley, Wesleyan, and Tufts. All this makes a very good showing for the school in the matter of the scholastic equipment of the faculty. It is noteworthy, however, that except in the cases of the records containing more or less normal work, there occur but two instances (one a clear-cut Wellesley statement) of any mention of professional, as distinguished from academic, preparation for high school teaching: that is, the typical college graduate teacher in Brookline has not had, or considers as unworthy of special mention, any courses in education, even such as relate to the history and philosophy of secondary education and the nature and needs of youth, or to principles of method for high school teaching. Apparently the fourfold formula for the high school teacher's preparation, so clearly expressed and so generally accepted in recent years, — namely: (1) General academic preparation, (2) special academic preparation (the teacher's "specialties"), (3) professional preparation, and (4) experience in actual teaching — is thought of in Brookline in the abbreviated form that omits item three. Assuming that this inference from the teachers' reports is not erroneous, one finds right here one of the probable causes of such shortcomings in classroom work as will be indicated in a subsequent paragraph.

As regards the teachers' experience the table presents a good showing. Twenty-six of the 32 teachers listed had three or more years' teaching experience before they were taken into Brookline, and 18 had five or more years' experience before appointment in Brookline; so that in only six cases have any of

the present members of the high school faculty been accepted with less than three years of prior experience. And the column of years of service in Brookline shows: Periods for the 31 teachers, excepting the head master, ranging from one-half year to $26\frac{1}{2}$ years, with a median period of service of eight years; only five teachers (including the exchange teacher and the two teachers newly appointed in 1916) with less than two years' service in Brookline; seven teachers with from two to four years in Brookline; and 20 teachers who have served Brookline for five or more years, the periods for certain of these teachers running up to 12, 16, 19, 21 and $26\frac{1}{2}$ years. Moreover, of the 12 teachers who have been in Brookline High School less than five years, only two have had, in Brookline and previous positions, a combined experience of less than five years, and these two are the new appointees of 1916, in the table Teacher 5 and Teacher 21. Again, when the total years of experience for each of the 31 teachers (head master again excepted) are arranged in order from the highest to the lowest figure, from $33\frac{1}{2}$ years to one and one-half years, it is found that: (1) One-fourth the members of the staff, eight teachers of the senior group, have taught from $22\frac{1}{2}$ to $33\frac{1}{2}$ years; (2) one-fourth, eight teachers of the junior group, have taught from one and one-half to eight and one-half years; and (3) the middle 50 per cent of the faculty, 15 teachers, have taught from eight and one-half to $21\frac{1}{2}$ years, with the *median* term of experience falling at $16\frac{1}{2}$ years — a result establishing the fact that Brookline has no high school teachers so advanced in years and duration of service as to be thereby more or less incapacitated, and, on the other hand, not more than one of the comparatively immature and inexperienced teachers often found elsewhere making up a large proportion of the faculty. All these figures support also the declarations, found in various annual reports of the Superintendent, concerning the stability of the teaching corps in Brookline, and justify the gratification expressed over that circumstance.

The last column of the foregoing table sets forth the salaries paid in Brookline High School this year. Obviously there is a wide range of salaries here, from \$1000 to \$2800 for the heads.

of departments and \$3800 for the head master; but in a general way, excepting the \$1500 salaries, the higher salaries have come with years of service and the lower salaries are attached to the shorter periods of service. Thus all the salaries above \$1500 are going to teachers who have had 11 or more years of experience, and most of the salaries under \$1500 are received by teachers who have had less than 11 years' experience. The extreme variation in length of service of the teachers receiving \$1500 is explained by the fact that this is the maximum for "assistants," women not in departmental headships; and naturally some of them have stood at this maximum for a number of years, while others have just reached it after comparatively few years. Whether any unjustifiable discrepancies exist between the different salaries and the length and value of the service of the respective teachers is an important but delicate question not to be settled in the limited time available for the field work of this report. Certain queries, however, inevitably present themselves; for example, why is Teacher 14, apparently an altogether satisfactory teacher, after $12\frac{1}{2}$ years of service in Brookline, now receiving only \$1350, when Teacher 3, with but two and a half years in Brookline and only nine and a half years of total experience, has already reached \$1350?

The present distribution of salaries in Brookline High School can be seen best when arranged as follows:

HIGH SCHOOL FACULTY SALARIES, 1916-17.

Faculty Groups	Distribution of Salaries																	Total
	1000	1050	1150	1200	1300	1350	1400	1450	1500	1750	1900	2200	2500	2600	2800	3800		
Men.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	1	3	1	3	1	11	
Women..	1	4	1	1	2	1	1	2	7	.....	1	.....	.....	.....	.....	.....	21	
Total .	1	4	1	1	2	1	1	2	8	1	1	1	3	1	3	1	32	

Here the black lines show the limits set by the salary rule which reads: "The salaries of teachers shall be fixed at the time of their appointment; and, unless otherwise ordered, the maximum shall be—high school: head master, \$3800; head of department (man or woman), \$2800; masters, \$2500; assistants (women), \$1500." (Rules of the School Committee, chap. IV, sec. 3.) In the foregoing table the man at \$2600 and the woman at \$1900 are heads of departments not yet arrived at the maximum. Thus, although Brookline has, of course, a salary rule, she has no salary schedule; and apparently she feels no need of a schedule to regulate salary increases. Increases for efficient service, though not ordered by rule, are reported to be commonly granted annually in \$50 or \$100 increments up to the maxima set by the rule. Excepting the head master and the four heads of departments beyond \$2500, the salaries of the remaining 27 teachers, ranging from \$1000 to \$2500, show a present median salary of just \$1500; and, because of the number of teachers at \$1500 (eight), the median remains the same even when all the heads of departments are included in the reckoning.

These Brookline High School salaries, both the maxima ordered in the rules and the actual salaries of the present year, are higher than the salaries of high school teachers anywhere except in certain of the largest cities. Such salaries, however, are probably not too high for Brookline, since the community is now, in the matter of living expenses and the things expected of teachers, to all intents and purposes a part of the city of Boston. Furthermore, it is proper to question whether there should be as much as \$1000 difference between the maximum attainable by "assistants," the women, \$1500, and the "masters," maximum, \$2500; so that, unless the present salary rule is to be completely revised, the recommendation may be offered that the boundary for the "assistants" be moved up to a point less distant from that of the "masters."

Taking up, finally, the last topic set for consideration in this section of the report, the personality of the high school teachers and the quality of their classroom instruction, one reaches what is rightly regarded as the most difficult and delicate item of a

high school survey. Upon one aspect, however, of the Brookline situation an immediate and positive judgment can be rendered. All the foregoing exposition of present conditions in Brookline High School — the relatively high salaries, the comparatively small classes, the resulting unoppressive assignments upon teachers, the short school day — all these circumstances create a situation that should be attractive to the very best teachers because permitting the performance of a very high grade of classroom work. That one's expectation of finding here a high school faculty distinctly superior to the average is realized has been indicated already; and yet it must now be recorded that the visitor's gratification is tempered by the discovery that, in certain respects at least, what is going on in the classrooms of Brookline High School seems disappointingly like the things seen and heard in other less fortunate high schools.

In respect, first, to the personality of the high school teachers, it may be said that this term, indefinable but designating something very real and extremely important in teaching (as well as in all other situations involving personal relations), embraces in its connotation such elements as personal appearance, dress, bearing and manners, voice, use of English, evidence of culture, sense of humor, and disposition toward the pupils. According as a teacher makes a good or a poor showing in these aspects of personality, as he goes through the daily round of instruction, he will prove forceful or weak, attractive or unattractive, stimulating to youth and calling forth the boys' and girls' best efforts, or uninspiring and provocative of nothing but indifference if not repugnance and open opposition. In personality the members of Brookline High School faculty, with but three or four exceptions, impress one very favorably; they constitute a strong corps; and the effects of their personal force and their good influence are seen in the respect shown by the pupils to their teachers, in the pleasant personal relations and satisfactory school spirit manifested, and in the generally excellent discipline of the school already noted under Organization and Management.

Regarding the quality and results of the instruction given in a school, one seeks some tangible objective data to offer alongside

the professional judgments formed from sample views of the actual teaching. In the present case two sources of such data were readily found: First, in the college entrance records of Brookline graduates and their collegiate work through the freshman year; and, second, in the high school records of failures year by year in the various subjects taught. Report has already been made of the success of Brookline High School students both in the college entrance examinations and in the freshman work in college; and this, as has been stated, is an evidence that, for certain significant purposes at least, the quality and results of the high school instruction must be good. Not so satisfying, however, is the record of success and failure within the school itself in the various subjects of instruction, as indicated by the term marks the teachers have reported to the office. Upon this point the head master submitted a table of failures he had compiled, showing for the past three years the number of pupils enrolled in each subject, the number "conditioned," and the percentage the "conditioned" were of the whole number pursuing the subject. "Conditioned," as the term is used in this connection, includes both the pupils who failed so emphatically as to be listed to repeat the study and also the pupils conditioned merely in the ordinary sense, *i.e.*, found not passable at the end of the year but given the privilege of passing off the subject, if they can, in an examination at the beginning of September. The head master's failure table is here presented, with the addition of a column headed "failure index" for summing up the three years' percentages of failure.

HIGH SCHOOL FAILURES IN THREE YEARS — Continued.

Subjects	1913-14			1914-15			1915-16			Failure Index
	En-rolled	Condi- tioned	Per Cent Condi- tioned	En- rolled	Condi- tioned	Per Cent Condi- tioned	En- rolled	Condi- tioned	Per Cent Condi- tioned	
II Latin.....	26	3	11.5	33	0	0	31	2	6.5	18.0
III Latin.....	38	6	16.0	46	6	13.0	56	9	16.0	45.0
IV Latin.....	59	9	15.0	65	17	26.0	76	15	20.0	61.0
I French.....	30	3	10.0	40	0	0	26	0	0	10.0
II French.....	32	9	14.5	57	2	3.5	67	6	9.0	27.0
III French.....	83	10	12.0	122	28	23.0	118	22	18.6	53.6
IV French.....	116	13	11.0	134	28	20.9	199	38	19.0	50.9
I German.....	23	2	10.0	23	0	0	20	1	5.0	15.0
II German.....	39	10	25.6	42	10	24.0	39	1	2.6	52.2
III German.....	38	11	29.0	60	19	31.7	49	13	26.5	87.2
I Greek.....	0	0	0	3	0	0	5	0	0	0
II Greek.....	5	1	20.0	7	0	0	4	0	0	20.0
III Greek.....	5	0	0	6	1	16.7	6	0	0	16.7
Chemistry.....	25	0	0	44	0	0	110	4	3.6	3.6
I Physics.....	31	1	3.0	32	1	3.0	37	1	2.7	8.7
II Physics.....	40	6	15.0	54	4	7.0	47	4	8.5	30.5
Physical Geog.....	34	4	11.8	37	5	14.0	87	11	12.6	38.4

HIGH SCHOOL FAILURES IN THREE YEARS—Continued.

Subjects	1913-14			1914-15			1915-16			Failure Index
	En-rolled	Condi- tioned	Per Cent Condi- tioned	En-rolled	Condi- tioned	Per Cent Condi- tioned	En-rolled	Condi- tioned	Per Cent Condi- tioned	
Biology	28	4	14.0	43	4	10.0	102	10	9.8	33.8
Domestic Science	41	2	5.0	68	1	1.5	39	1	2.5	9.0
Sewing	76	2	3.0	285	18	6.0	156	1	.6	9.6
Art	...	...	...	287	13	4.5	102	3	3.0	7.5
Manual Training	146	9	6.0	136	5	4.0	76	2	2.6	12.6
Mechanical Drawing	142	15	10.0	117	2	2.0	82	9	11.0	23.0
I Bus. Practice	12	0	0	14	0	0	12	1	8.0	8.0
II Bus. Practice	12	0	0	34	1	3.0	28	3	10.7	13.7
III Bus. Practice	30	7	23.0	53	9	17.0	38	8	21.0	61.0
IV Bus. Practice	73	11	15.0	51	5	10.0	53	12	22.7	47.7
I Stenography	15	0	0	18	0	0	12	0	0	0
II Stenography	16	3	19.0	19	3	15.8	18	2	11.0	45.8
I Typewriting	21	0	0	17	0	0	13	0	0	0
II Typewriting	23	4	17.0	20	2	10.0	40	2	5.0	32.0
III Typewriting	48	1	2.0	76	8	10.5	36	1	2.8	15.3

(All figures accepted without verification, on the authority of the head master. Blanks in the record occasioned by revision of curriculums)

The first thing to be said about this table is that the amount of failure in Brookline High School, though evidently very considerable, is no greater than that found in many other supposedly good high schools; and yet just out of this fact arises one's disappointment — that the Brookline faculty, with all their exceptional advantages, have not succeeded in getting what they rate as satisfactory pupil work without producing the usual high ratio of "scholastic mortality." In former years such percentages of failure were often regarded as an evidence of merit in teaching, a proof of high standards, a commendable weeding out of the unfit, the pupils not readily adjustable to a generally inflexible Course of Study and an equally rigid teaching method. Today, however, for the public high school at least, a quite different view is coming to prevail; so that the ideal now is rather to do some adjusting of the curriculum and method to the pupils, and then, in consequence, to raise materially the score of successes in the school; and a consistently high percentage of failures in any room *may* appear as a mark of demerit against the teacher, a confession that he is unable to produce good results except with the bright and docile whom any one could teach.

Of the various other observations that might be made upon the showing of results of instruction that this failure table affords, the most significant is the singling out of those subjects in the teaching of which, first, the greatest amount of failure occurred, and, second, no failure at all occurred. The table lists 47 subjects, a *subject* representing a year-unit of teaching in any field of study, with the Roman numerals designating the grades of the school from the senior year downward — thus, "I English" means fourth-year English and "IV English" means first-year English. Commenting first upon the instances of no failure, one observes that this occurs always in fourth-year or third-year classes or in very small classes; and as that is just what should be expected in any good high school, the no-failure here need not arouse any suspicion of "soft pedagogy." On the other hand, a study of the larger percentages of failure in each year and an examination of the "failure index" for the three years show disturbing results in a number of subjects, and an

outcome in Algebra (the first-year Mathematics), in Geometry (the second-year Plane Geometry), and in III German (the first year of German) that is little short of startling. In the latter three subjects the failure index strikes the three highest points in the whole table, 76.6, 79.5, and 87.2 respectively; and in each of the three years recorded the percentage of failure in these subjects arose above 20 per cent, so that for every four or fewer pupils passed one was failed — indeed once in Geometry, with 36 per cent of the pupils failing, the ratio of failure rose to more than one to two. Similarly, in a number of other subjects, led by first-year Latin and second-year Business Practice but including also first-year and second-year English, third-year Mathematics, first-year and second-year French, and the second year of German, what seems an excessive amount of failure is found, as indicated by single-year percentages of 20 per cent or more accompanied by a three-year index of failure rising above 50.

Consideration for the numerous failures represented by this table suggests the recommendation that in every case of a failure index exceeding 30 (or other figures indicating an average annual failure higher than 10 per cent) the selection of subject matter and the teaching method employed in the subject should be carefully inspected, with a view to the introduction of abbreviating reforms. This recommendation is quite consistent with former suggestions and recommendations (for example, on differentiated treatment of subject matter in different classes and curriculums) presented in the section of this report treating Program of Studies and Curriculums, and it also expresses what some progressive high schools are already busied with in the process of improving themselves. The foregoing paragraph specifies 12 points of inquiry with which to begin. Moreover, when this large proportion of failure is viewed in connection with the reported success of Brookline High School graduates in the college entrance examinations, and other evidence submitted elsewhere, one has reason to infer that the school has developed, perhaps unconsciously, a system of teaching and examining that is in large measure a direct drilling for the college entrance ordeal; and in this process maybe the many not bound for college are unnecessarily neglected and often

ultimately sacrificed by the maintenance of the adopted college preparatory discipline. This point will be touched upon again in a subsequent paragraph.

In addition to the objective data just submitted upon the quality and results of the high school instruction, it is desirable to offer also some expression of professional opinion, derived from actual observation of the educational process going on in the school. Passing judgment in this way upon the classroom work of a large corps of teachers is unquestionably a very delicate task; and without the opportunity of making a prolonged and varied analysis of each teacher's work there should be no pretense of anything like final judgments. Much of what follows, therefore, is to be understood as merely the best opinion the Survey Staff could form in the very limited time at their disposal for classroom visitation and the direct study of typical teaching. However, one or more members of the committee did become personally acquainted with every teacher of the high school faculty, and each classroom was visited once or oftener while recitations were in progress.

It is almost needless to record, after all that has been hereinbefore reported, that the teaching in Brookline High School seems in general decidedly good and on a level clearly above that reached by the work in many high schools. Accordingly all that is now required is a statement of the shortcomings noted in one room or another as recitations in the various subjects of the program work would degenerate from genuine teaching to that mere lesson hearing which many a parent could conduct. As to the organization of the lesson for the production of the most educative effects upon the pupils, there seemed in some rooms quite insufficient thought given to the introduction of desirable variations from the textbook treatment, especially in the direction of supplemental illustration and application and the relating of the matter taught to the actual experiences of the pupils. Often indeed, even with the regular use of a textbook to secure systematic progress through a subject, quite independent treatment and more or less complete reorganization of certain topics are needed to adapt the work most judiciously to particular classes. As to teaching technique, the

elements that constitute the most effective procedure for the professional conduct of recitations, defects were repeatedly noticed; in the failure to make specific and stimulating assignments; in the lack of suggestions for mode of attack upon the lessons assigned, so that teaching how to study may become a continuous item in the classroom work; in inexpert questioning and apparent unawareness of or disregard of established principles of good questioning in the recitation; in the teacher's talking too much, so that the teacher, rather than the pupils, did the reciting and too much of the lecture form of work came in, reducing the pupils to a state of mere receptivity; in the giving of unnecessary assistance to pupils under circumstances where they might with advantage have been stimulated to the full in the exercise of self-help and the utilization of their own resources; and in the conduct of drill lessons unenlivened by the infusion of motive, variety, and helpful vivacity. As to the pupils' reactions in the course of the recitation, there appeared in certain rooms altogether too little animation, or lively interest, or even enthusiasm (which some teachers succeed in inspiring); for here the pupils seemed passive rather than active, inert rather than thoughtfully alert, doing their duty, it is true, but apparently engaged too often in the stoical endurance of a grind necessary in order to be landed safely in college.

Naturally, if a teacher's view of the function of high school work is circumscribed to the preparation of the elect for success in the traditional college entrance examinations and the elimination of all unfit for this honor, then the criticisms offered in the foregoing paragraph may appear not only needless but simply irrelevant. Indeed one teacher, to whom a member of the Survey Staff ventured to put some questions in reference to the technique of a recitation just observed, showed a disposition to brush aside all the critic's implied strictures with the confident and seemingly all-sufficient declaration, "Well, my boys always get through the college entrance examinations." On the other hand, to safeguard this part of the report from misinterpretation, it may be well to reassert that much of the teaching seen did not exhibit in any notable way the weaknesses just described.

By way of offering, in conclusion, some notes upon the cause of, and the remedies for, such shortcomings as appeared in the high school teaching observed, it may be said that probably a principal cause is found in the absence of *professional* training, as distinguished from academic equipment, in the preparation of a large proportion of the faculty. Moreover, it may be true also that the heads of departments, in their practice of departmental supervision, are unnecessarily solicitous lest they impose methods upon their assistants; for one head of department turned in a report indicating an anxiety to be "not in any sense a dictator," and stating a plan of holding assistant teachers, "responsible for results," but leaving wholly to them "the method by which they shall obtain these results." The head master, on the contrary, evidently feels no such hesitation about instructing his teachers, particularly the junior members of the corps, upon the subject of teaching method; but the need of suggestions toward improving the method of the recitation in Brookline High School is not limited, according to the observations of this Survey, to the younger and less experienced teachers. Efficient means for this desirable improvement of teaching technique should be found in more supervision directed especially toward this object; in departmental conferences, and even general faculty meetings, for the discussion of definite aims or objectives of the instruction, and more effective methods, really significant tests, and results of most worth; in studious consideration of the causes producing the high percentage of failure in the school; and in mutual classroom visiting on the part of all the members of the faculty to secure suggestive and illuminating objective views of one another's work in the conduct of typical recitation procedures.

CHAPTER XII.

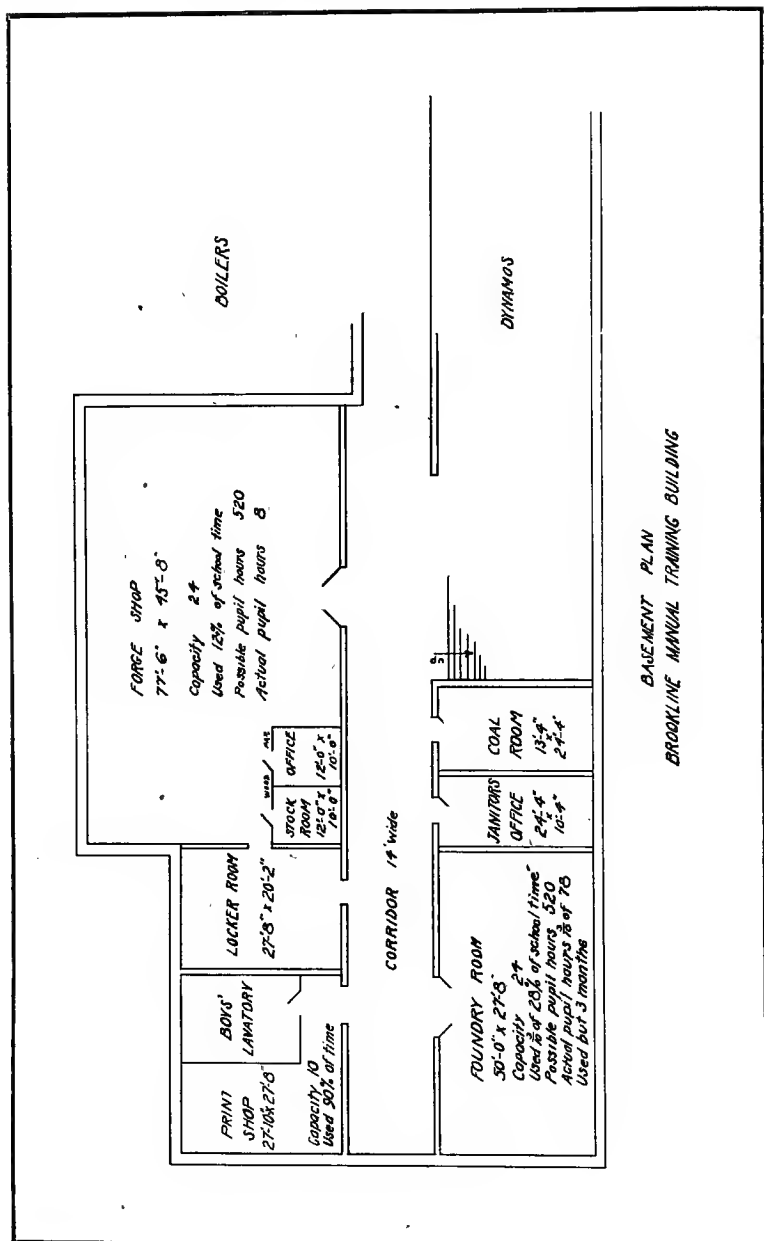
THE SCHOOL OF PRACTICAL ARTS.

The School of Practical Arts appears to have been organized in recognition of the fact that the grammar school and the high school did not offer courses well adapted to the needs of all groups of children in Brookline.

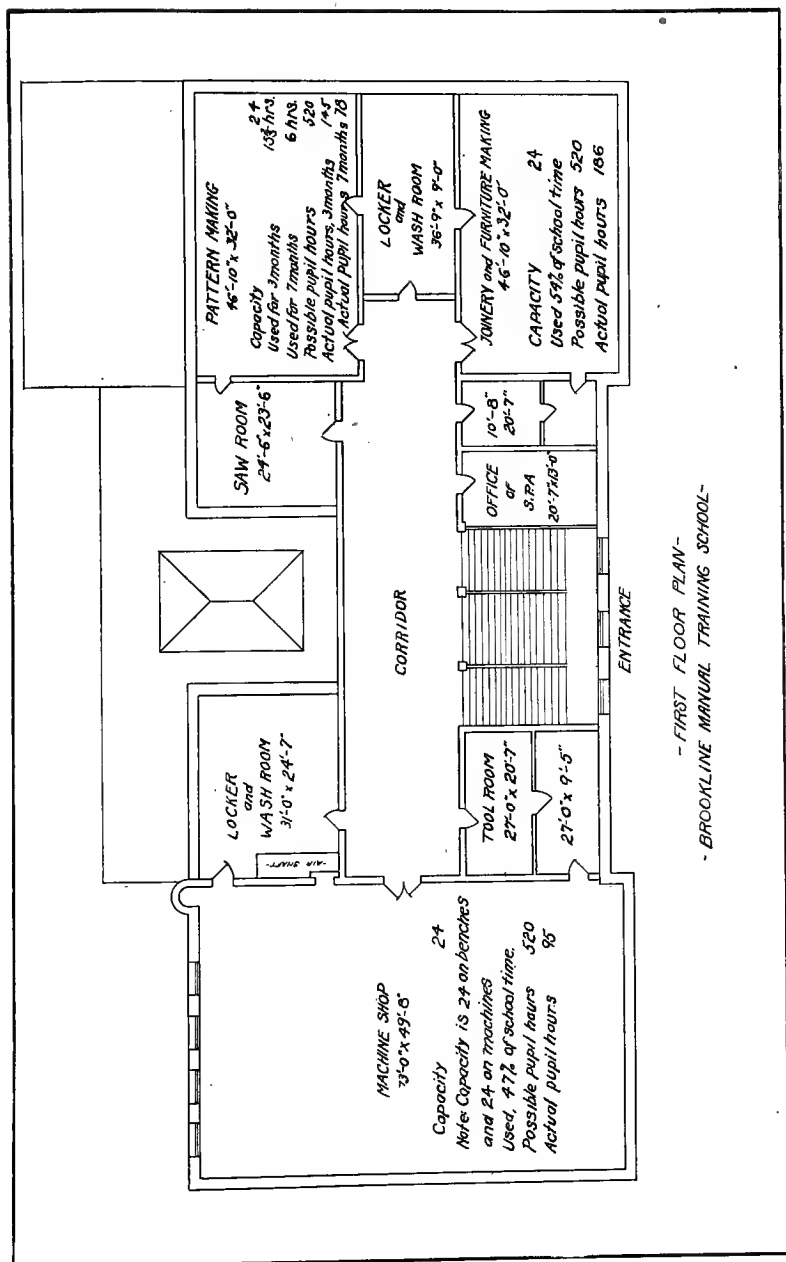
The regular grammar school course prepares for the high school. To those who can take a four-year course, the high school offers either a general academic course or preparation for professional or commercial lines. These courses do not adequately provide for the large number of children who cannot complete a four-year high school course, but who must soon seek industrial, domestic, or commercial employment. In certain grades of the grammar school, Manual Training, Cooking, and Sewing are taught, but, owing to the restricted scope of activities involved and the limitations of time given to them, these courses cannot function as prevocational courses for children who will directly enter employment.

The extensive equipment in the Manual Training High School is serving a smaller group of high school pupils each year, consequently much of the plant is being used by the high school for only a part of the day, and the entire time of the teaching staff is not fully employed with the high school. The high school pupils are not availing themselves of the Manual Training work, as they are busy meeting college entrance requirements or in taking the Commercial Courses and, in either case, are lacking interest in the Manual Arts work or the time for it. The establishment of the School of Practical Arts in the Manual Training High School building was a commendable move on the part of the Brookline school authorities to make this equipment and teaching staff available for children who could not attend high school.

But before the School of Practical Arts can reach the large group of children it should be serving, certain obstacles to its development must be removed. As constituted, it does not seem to be intimately and organically related to the other schools. It ranks neither as a grammar school nor as a high school; yet the work and the age of the pupils attending indicate that it laps over the upper two years of the grammar schools and the first year or two of the high schools. Its separateness is an obstruction to the full realization of its aims. A stigma seems to attach to it that it will be difficult to overcome while the school remains thus disconnected. Grammar school children realize that the school is not of high school grade and that Practical Arts pupils are not admitted to high school. To those who can go to high school this suggests inferiority. With the exception of printing, which is taught in a small basement room by a special instructor, the shop instruction is given by high school teachers using high school equipment. The signs placed at the entrances to the shops designating them as "high school" shops seem to express exclusion to the Practical Arts boys and girls who must use them. The programs of the Practical Arts courses are not made out until the high school requirements for the shops have been determined. After the needs for high school shop work have been met, the Practical Arts pupils may use the shops or rooms for such time as may be left. Naturally this cannot operate to the advantage of the School of Practical Arts. Several large rooms that are occupied by a very small group and for a very small part of the time are reserved exclusively for high school use, while the School of Practical Arts is forced to hold two classes simultaneously in one room, and other classes in the director's office. The printing equipment is crowded into a very small basement room. The following plans and tables indicate the relative size of the rooms, their capacity, the number of high school pupils using them, and the length of time they are used.



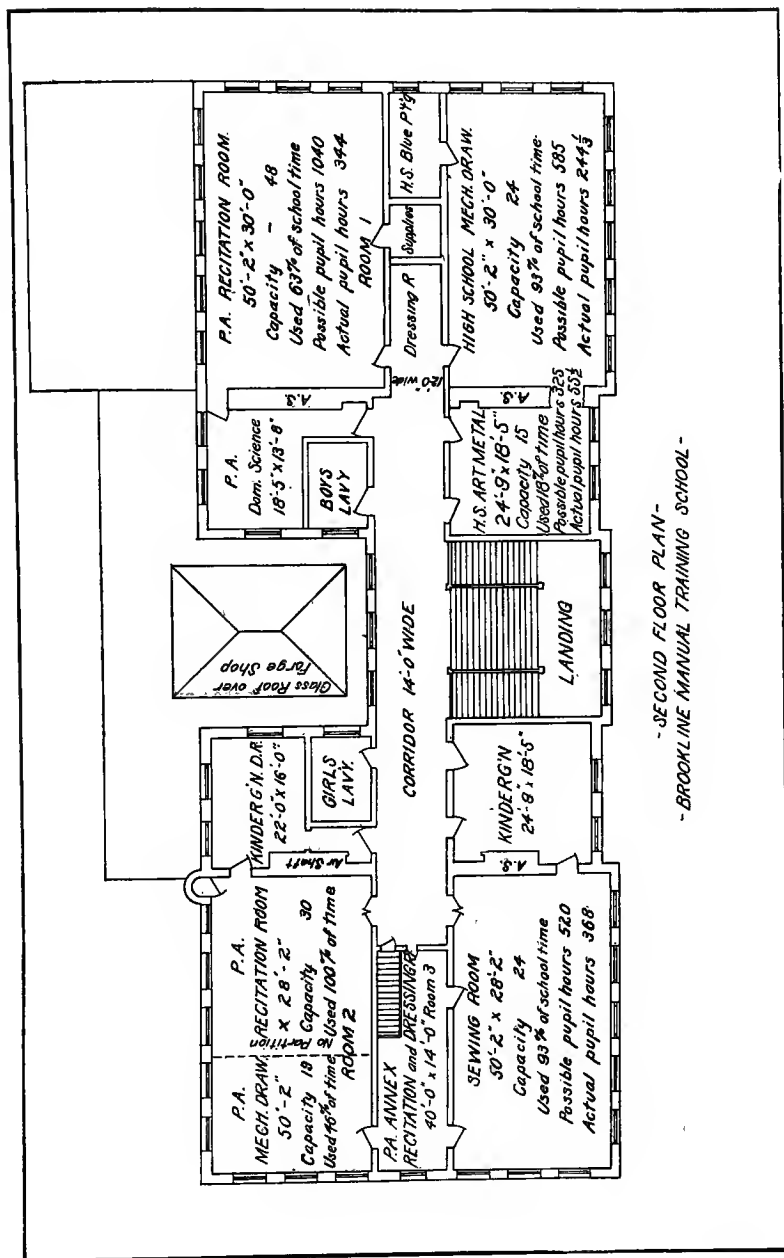
BASEMENT PLAN
BROOKLINE MANUAL TRAINING BUILDING



The tables showing how much these rooms are used include the School of Practical Arts and the high school. The drawings clearly show that the present use of the plant involves crowding in some instances, while in other cases large, expensively equipped rooms are used by an extremely small number of pupils for but a few hours in the week. If the Practical Arts work is to be continued in this plant, some adjustment should be made in the use of the shops and the rooms. The forge shop, machine shop, and foundry are used for but a small fraction of the possible pupil hours. All of the probable requirements for forge instruction could be accomplished with less than half of the present number of forges. These could with best advantage be installed in the machine shop. Another method would be to change the character of the present forge shop so as to retain a few forges and in addition to accommodate the machine equipment. Foundry work should be taught as part of the Pattern Making instruction. A part of the present foundry equipment would answer all requirements for this part of the instruction. If part of this equipment were removed, the pattern shop and foundry could be combined in the present foundry. These modifications would not handicap any of the work and would make room for the print shop and an extra mechanical drawing room in the present pattern shop. Better accommodations have been needed by these two departments. If these changes are made either the large forge shop or the machine shop would be vacant and would offer space for additional activities as they may be added. These suggestions are tentative. Other combinations are possible that may offer equal advantages.

The activities which the School of Practical Arts offers are limited to Machine Work, Woodwork, Printing, Cooking, Sewing and Elementary Commercial Training. To serve adequately the group of children who will soon leave school to enter employment, the significant activities into which these pupils may enter should be represented in the curriculum of the school.

It is believed by the members of the Survey Staff that most of the handicaps mentioned above as interfering with the work undertaken by this school could be overcome by the introduction of



- SECOND FLOOR PLAN -
- BROOKLINE MANUAL TRAINING SCHOOL -

additional types of Practical Arts and by such changes of organization as would establish closer relations with the grammar schools and the high school. The following diagram shows these relations.

In determining what activities should be represented in a Practical Arts course, it is necessary to consider, first, the present employment of the adults of Brookline and, second, the expectations of the children as to their probable vocations. This information has been secured by the committee from two sources: From the poll tax list, the occupations of the citizens of Brookline were tabulated, and from a vocational inquiry blank, submitted to the pupils of the seventh, eighth, and ninth grades, the expectations of the children were learned. A copy of the questionnaire is given below:

**Vocational Inquiry — 7th, 8th, 9th Grades, Brookline, Mass.,
January, 1917.**

Name Grade.....
 School.....Teacher.....
 Were you born in Brookline?.....In Massachusetts?.....In the U. S?.....
 Do you intend to finish the ninth grade?.....Do you intend to go to high school?.....
 To college? Do you intend to go to business school?.....
 What do you want to do for a living when you grow up?

 Was your father born in Brookline?.....In Massachusetts?.....In the United States?.....
 What is your father's occupation?.....
 How many brothers less than 21 years old have you, who are at work?
 Tell the age of each brother and the kind of work he does
 1. Age.....Kind of work.....
 2. Age.....Kind of work.....
 3. Age.....Kind of work.....
 How many sisters less than 21 years old, who are at work?
 Tell the age of each sister and the kind of work she does
 1. Age.....Kind of work.....
 2. Age.....Kind of work.....
 3. Age.....Kind of work.....
 In giving occupation or kind of work, state business as well as occupation,
 as, for example: Salesgirl in dry goods store, finisher in tailor shop.

The list of poll tax payers represents occupations of men only. While the numbers of persons engaged in different occupations do not indicate the number of boys who will enter these vocations, the grouping of these numbers under such general headings as Commercial, Industrial and Professional makes it

possible to determine the trend in the vocations of the men in the community. The following table indicates the numerical order in which these groups stand. Only occupations represented by ten or more workers are included in this tabulation.

DISTRIBUTION OF OCCUPATIONS LISTED IN THE POLL TAX LIST,
TAKING INTO ACCOUNT OCCUPATIONS REPRESENTED
BY TEN OR MORE WORKERS.

Commercial.....	3314	Public service.....	592
Industrial.....	1121	Agricultural.....	276
Personal service.....	836	Retired.....	252
Professional.....	774	Students.....	202.

This table is significant in that it shows that Brookline, so far as the occupations of its citizens are concerned, is a suburb in the metropolitan district and not an independent community. The occupational groups furnish a suggestion that the schools of Brookline should offer a wider range of grammar and high school courses than are now available if the children are to be prepared to enter similar groups of occupations.

The replies to the vocational inquiry blanks indicate that most of the children in the seventh, eighth and ninth grades have some sort of vocational aim. Only 88 boys and 127 girls reported that they were undecided as to their choice of occupations.

The following tabulation indicates the occupations of the fathers, older brothers and sisters, and the choice of occupations of the pupils. The places of birth of the fathers are also indicated.

TABULATIONS OF REPLIES TO VOCATIONAL INQUIRY BLANKS
RECEIVED FROM PUPILS OF SEVENTH, EIGHTH AND
NINTH GRADES.

CHART NO. 1.

OCCUPATIONS	Fathers	Older Brothers	Older Sisters	FATHERS				Number of Boys Choosing	Number of Girls Choosing
				Born in Brookline	Born Else- where in Mass.	Born Else- where in U. S.	Not Born in U. S.		
Accountant.....	3	...	...	...	...	2	1	1	1
Advertising Agent.....	4	...	...	...	1	3	...	3	...
Architect.....	4	...	...	...	3	1	...	8	1
Actor.....	...	...	...	...	...	...	...	3	3
Army.....	...	...	...	...	...	...	...	4	...
Artist.....	...	...	...	...	...	...	...	...	7
Author.....	...	...	...	...	...	...	...	1	5
Aviator.....	...	...	...	...	...	...	...	1	...
Baker.....	2	3	...	...	...	...	2	...	...
Banker.....	10	...	...	...	6	4	...	6	...
Barber.....	2	1	...	...	1	...	1	...	...
Blacksmith.....	8	4	3	...	1	1	6	...	...
Blast Operator.....	1	1	...	...	1	...	...	...	...
Boilermaker.....	1	1	...	1	...	...	...	...	...
Bookkeeper.....	3	2	1	...	2	...	...	3	5
Bottler.....	2	1	1	...	...	...	2	...	...
Brakeman.....	1	...	...	...	...	...	1	...	...
Bricklayer.....	1	1	...	...	...	...	1	...	...
Broker.....	7	1	1	...	4	2	1	2	...
Butcher.....	2	...	...	...	1	...	1	...	...
Baseball Player.....	...	...	...	...	...	...	...	3	...
Boat Builder.....	...	...	...	...	...	...	...	1	...
Caretaker.....	5	...	...	...	...	2	2	1	...
Carpenter.....	13	5	3	...	2	1	8	3	...
Cashier.....	3	2	2	...	2	1	...	...	...
Caterer.....	1	1	...	...	...	...	1	...	...
Chauffeur.....	45	6	3	1	5	6	33	14	...
Chef.....	1	...	...	...	...	...	1	...	...
Christian Science Practitioner.....	1	...	...	...	1	...	...	...	...
Civil Engineer.....	5	...	...	...	3	2	...	18	...
Clerk.....	4	1	...	...	1	2	1	3	...
Coachman.....	10	4	7	...	...	1	8	...	...

CHART NO. 1—Continued.

OCCUPATIONS	Fathers	Older Brothers	Older Sisters	FATHERS				Number of Boys Choosing	Number of Girls Choosing
				Born in Brookline	Born Elsewhere in Mass.	Born Elsewhere in U. S.	Not Born in U. S.		
Collector	2					1	1		
Conductor	5	1				1	4	1	
Consulting Engineer	3					2	1	1	
Contractor	9	2	3	2	1	2	4		
Coppersmith	2				2				
Customs Officer	2				1		1		
Chemical Engineer								1	
Caretaker of Animals								1	1
Decorator	2				2			3	1
Dentist	4				3		1	1	1
Designer	1						1	1	10
Detective	1	1			1			1	
Doctor	12		1		2	6	4	11	3
Draftsman	2						2	2	
Driver	5	2		1	1		3	1	
Druggist	1			1				1	
Dressmaker									10
Domestic									6
Editor								1	
Electrical Engineer	12	1	1	2	5	3	2	32	
Elevator Superintendent	1					1			
Engineer	6				2		4	16	
Expressman	2		2		1	1		1	
Elocutionist									2
Farming	4	3	2	1			3	14	
Fireman	18	8	5	9	1	1	7	5	
Florist	4	6	1	2	1	1		2	
Foreman	10			1	1	2	6	1	
Furrier	1						1		
Forestry Work								1	
Gardener	28	9	5		1	1	26	1	1
Grocer	1		1		1				
Horseshoer	2			2					
Hospital Manager	1				1				
Hostler	6	1				2	4	2	
Hotel Manager	5	1				2	3		

[illegible]

CHART NO. 1 — Concluded.

OCCUPATIONS	Fathers	Older Brothers	Older Sisters	FATHERS				Number of Boys Choosing	Number of Girls Choosing
				Born in Brookline	Born Elsewhere in Mass.	Born Elsewhere in U. S.	Not Born in U. S.		
Organist.....	1				1			1	
Office Work.....									
Painter.....	14	3	5	3	1		10	1	
Patternmaker.....	2				2				
Piano Mover.....	1		1				1		
Plumber.....	6	2	2	2	2		2		
Policeman.....	16	8	4	4	2	5	5	2	1
Postmaster.....	1						1		
Printer.....	5			1		3	1		
Real Estate.....	15			2	5	1	7	4	
Retired.....	6	3		4			2		
Roofer.....	2			2					
Salesman.....	28	2	2	1	10	9	7	11	1
Secretary.....	3					3		1	12
Settlement Director.....	1					1			2
Sexton.....	2	1					2		
Shipping Clerk.....	6	1		2		2	2		
Shoemaker.....	7	1	2		1		6		
Singer.....									2
Stableman.....	4	2	1		1		3		
Steamfitter.....	1			1					
Stenographer.....									44
Superintendent Estate.....	2						2		
Superintendent Public Service.....	2				1		1		
Tailor.....	5	1	2				5		
Teacher.....	6	1		2	1	2	1	5	70
Teamster.....	12	12	5	4			8	1	
Telegrapher.....	1	6		1				1	
Telephone Operator.....									5
Treasurer.....	2				1	1			
Trucking.....	1						1		
Typewriter.....									1
Undecided.....								90	129
Undertaker.....	2		3		2			2	
Watchman.....	2						2		
Water Registrar.....	1				1				
Wine Clerk.....	1						1		

TABLE SHOWING OCCUPATIONS OF PUPILS' FATHERS,
GRADES VII, VIII AND IX.*A. Professional.*

<i>Occupation</i>	<i>No.</i>	<i>Occupation</i>	<i>No.</i>
Architect.....	4	Electrical Engineer.....	12
Civil Engineer.....	5	Lawyer.....	29
Consulting Engineer.....	3	Mechanical Engineer.....	4
Dentist.....	4	Naval Officer.....	5
Doctor.....	12	Teacher.....	6
Total.....			84

B. Commercial.

Accountant.....	3	Insurance.....	9
Advertising Agent.....	4	Jeweler.....	5
Banker.....	10	Letter Carrier.....	6
Bookkeeper.....	3	Merchant.....	95
Broker.....	7	Policeman.....	16
Cashier.....	3	Real Estate.....	15
Clerk.....	4	Salesman.....	27
Conductor.....	5	Shipping Clerk.....	5
Hotel Manager.....	5	Secretary.....	3
Total.....			225

C. Industrial, Agricultural and Service.

Blacksmith.....	8	Laborer.....	52
Caretaker.....	5	Laundry.....	3
Carpenter.....	14	Machinist.....	5
Chauffeur.....	45	Manager.....	10
Coachman.....	10	Manufacturer.....	15
Contractor.....	9	Mason.....	6
Driver.....	5	Meat Cutter.....	3
Engineer.....	6	Mechanic.....	9
Farming.....	4	Motorman.....	7
Fireman.....	18	Painter.....	14
Florist.....	4	Plumber.....	6
Foreman.....	10	Printer.....	5
Gardener.....	24	Shoemaker.....	7
Hostler.....	6	Stableman.....	4
Ice Man.....	3	Tailor.....	5
Janitor.....	20	Teamster.....	12
Total.....			354

TABLE SHOWING CHOICE OF OCCUPATIONS BY BOYS AND GIRLS,
GRADES VII, VIII AND IX.*A. Professional.*

<i>Boys</i>	<i>No.</i>	<i>Girls</i>	<i>No.</i>
Electrical Engineer	32	Teacher	70
Lawyer	25	Nurse	37
Civil Engineer	18	Musician	33
Mechanical Engineer	13	Artist	7
Doctor	11	Author	5
Naval Officer	11	Actress	3
Architect	8	Doctor	3
Minister or Priest	5	Missionary	3
Musician	5		
Teacher	5		
Army	4		
Actor	3		
Base Ball Player	3		
Total	143	Total	161

B. Commercial.

<i>Boys</i>	<i>No.</i>	<i>Girls</i>	<i>No.</i>
Merchant	24	Stenographer	44
Salesman	11	Secretary	12
Banker	6	Bookkeeper	5
Real Estate	4	Telephone Operator	4
Advertising Agent	3		
Bookkeeper	3		
Clerk	3		
Total	54	Total	65

C. Industrial.

<i>Boys</i>	<i>No.</i>	<i>Girls</i>	<i>No.</i>
Engineer	16	Designer	10
Mechanic	16	Dressmaker	10
Chauffeur	14	Domestic	6
Farmer	14		
Machinist	9		
Fireman	5		
Carpenter	3		
Decorator	3		
Total	80	Total	26

TABLE SHOWING THE NUMBER OF PUPILS MAKING CHOICE OF VOCATIONS AND THOSE NOT MAKING ANY CHOICE, GRADES VII, VIII AND IX.

<i>Name of School</i>	<i>Not Making Choice of Vocations</i>	<i>Making Choice of Vocations</i>	<i>Totals</i>
Devotion.....	44	129	173
Heath.....	30	70	100
Lawrence.....	17	71	88
Lincoln.....	33	132	165
Runkle.....	51	38	89
Pierce.....	40	166	206
Total.....	215	606	821

The distribution of occupations for fathers, older brothers and sisters, as shown in the above table, discloses the kind of work adults are doing now. The columns giving the choices of occupations by the boys and girls simply show what occupations the pupils aspire to follow. The wide discrepancy in most cases between the occupations of those in employment and the choices made by the children indicates that most of the children are aspiring to occupations on a somewhat different plane from those of the fathers, older brothers and sisters. This is particularly evident in the case of the number of boys choosing engineering courses and the number of girls choosing courses for musicians, teachers and stenographers.

In considering the aspirations of the pupils, it should be remembered that these aspirations have been largely influenced by the experience and knowledge which the school has given. This knowledge has been limited in scope and has been given a distinctly college preparatory trend. Consequently, many have indicated the expectation of going to college when there is no possibility of their doing so.

It cannot be inferred, however, that these boys and girls will follow the vocations of their parents or older brothers and sisters. It is noticeable that a very small number of parents were born in Brookline. As is the case in practically all American cities,

a large proportion of the people move from one city to another. The following table of birthplaces of fathers and of children indicates that Brookline should offer varied as well as broad courses of education to meet the needs of the children, since a large proportion of the children will undoubtedly gain their livelihood in another community.

TABLE SHOWING BIRTHPLACE OF FATHERS HAVING CHILDREN IN SCHOOL IN THE SEVENTH, EIGHTH AND NINTH GRADES.

<i>Name of School</i>	<i>Born in</i>	<i>Born</i>	<i>Born</i>	<i>Born</i>	<i>Total</i>
	<i>Brookline</i>	<i>Elsewhere in Massachusetts</i>	<i>Elsewhere in United States</i>	<i>in Foreign Countries</i>	
Devotion.....	7	53	68	45	173
Heath.....	19	5	6	69	99
Lawrence.....	2	38	32	16	88
Lincoln.....	24	21	10	114	169
Runkle.....	2	34	30	23	89
Pierce.....	28	27	29	111	195
Total	82	178	175	378	813

TABLE SHOWING BIRTHPLACE OF SCHOOL CHILDREN IN THE SEVENTH, EIGHTH AND NINTH GRADES.

<i>Name of School</i>	<i>Born in</i>	<i>Born</i>	<i>Born</i>	<i>Born</i>	<i>Total</i>
	<i>Brookline</i>	<i>Elsewhere in Massachusetts</i>	<i>Elsewhere in United States</i>	<i>in Foreign Countries</i>	
Devotion... ..	42	88	36	8	174
Heath.....	78	19	2	1	100
Lawrence.....	23	46	17	2	88
Lincoln.....	108	43	5	9	165
Runkle.....	18	53	18	5	94
Pierce.....	116	61	17	13	207
Total	385	310	95	38	828

Of 820 fathers, 10 per cent were born in Brookline, 22 per cent elsewhere in Massachusetts, 21 per cent elsewhere in the United States, and 45 per cent were foreign born. As indicated in the tabulation from the vocational inquiry blanks, the majority of the chauffeurs, gardeners, laborers, painters, and teamsters

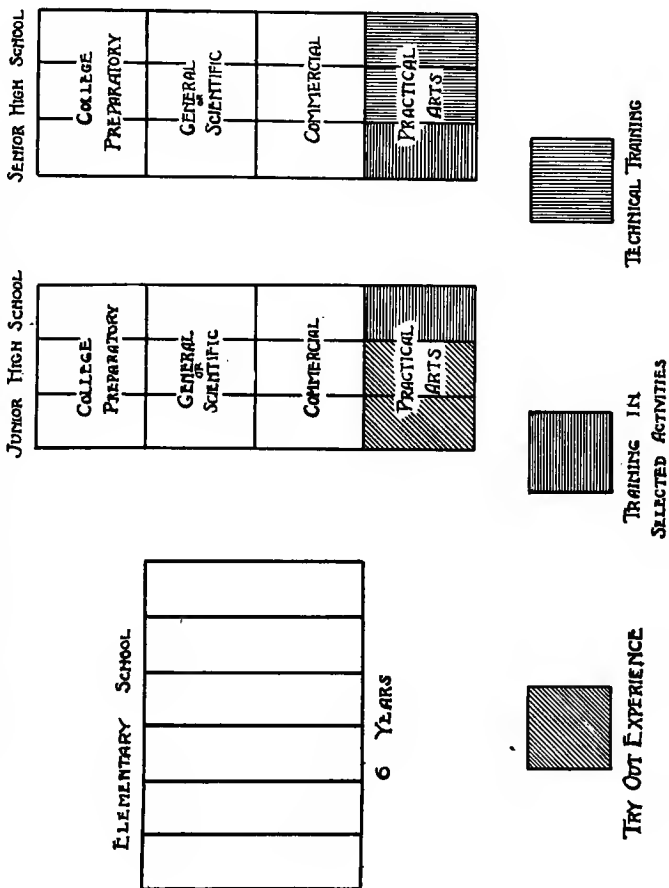
were foreign born. The trend of occupations of children of foreign born parents will probably be different from that of the parents. A system of education in which school aims chiefly to prepare for high school, and high school to prepare for commercial work or for college, will not fit these children for their life work. A large proportion of them must enter the industrial field and the schools which they attend should offer practical, industrial and home-making courses related to their general academic training. These practical courses should offer a sufficient try-out experience in a fairly wide range of activities to inform the children as to their possibilities in these activities. After this try-out experience, special training courses should be given to those who elect definite vocations.

TABLES SHOWING THE EXTENT TO WHICH CHILDREN EXPECT TO COMPLETE THEIR EDUCATION.

<i>School</i>	<i>Will Finish Ninth Grade</i>		<i>Will go to High School but not to College</i>		<i>Will go to College</i>	<i>Total</i>
	<i>Will not Finish Ninth Grade</i>	<i>but Will Not go to High School</i>				
Devotion.....	2	15	31	125	173	
Heath.....	0	13	57	30	100	
Lawrence.....	1	6	18	63	88	
Lincoln.....	5	46	76	40	167	
Runkle.....	4	17	19	49	89	
Pierce.....	2	30	76	98	206	
Total	14	127	277	405	823	

The number who will realize their expectation educationally will be far less than that given in the above table; even should the expectation of all these children be realized, there would yet be 418 out of 823 not entering college. We know the proportion not going to college will be much larger. With the exception of those who complete the commercial course these children must leave school with no adequate preparation for their life work.

DIAGRAM SHOWING THE WORK IN PRACTICAL ARTS AS AN INTEGRAL PART OF JUNIOR AND SENIOR HIGH SCHOOL



CHAPTER XIII.

A DEMONSTRATION SCHOOL FOR BROOKLINE.

As a result of an educational survey, something of a practical nature should follow, not only in the matter of buildings, organization and general directions as to educational policy, but in addition something that would afford a continuous opportunity to test and demonstrate the best things capable of being done in the town of Brookline itself. It would be too much to expect that such a demonstration could be carried out with sufficient energy in every school at once. But if one school or a series of classes in one school could be devoted to this purpose, new practices in teaching could be demonstrated, their success made clear and tested in the strictest scientific manner, and the opportunity thus provided for all teachers in Brookline to observe the results obtained, and to carry them out in their own classes at the discretion of the authorities in charge.

Such a demonstration school would be neither a model school, on one hand, nor an experimental school, on the other, although it might fulfill to some extent the functions of both. The chief rôle of such a school would be to demonstrate, by actual teaching, practices and methods of getting results which have already been experimented upon and have already yielded favorable results. The whole work of such a school could never be regarded as an ideal or model set up for imitation by other schools. Only those practices which had been tested out in a completely objective, scientific manner, and the details of which had been completely recorded, and of which the results had been shown to be plainly without any ambiguity, could reasonably be offered by such a school for more extended application.

An example of the way in which this conception of a demonstration school could be carried out will make the matter clearer.

The Survey has shown that the eighth grade pupils of Brookline are on the average able to read silently at the rate of about 309 words a minute when the material is easy to comprehend. Reading at this rate the pupils are able to report on the average about 20 details out of a possible 35 from the material read. Ordinarily those who read the faster are on the whole able to report more details than those who read slower, since they have covered more ground. The faster reader has either less difficulty of comprehension or less mechanical difficulty in perceiving and following the words. In Brookline, however, there appears to be no connection between speed of reading and ability to reproduce. Since this is contrary to general belief, here again we have a subject for further investigation.

While the average rate of reading is 309 words a minute for the eighth grade, the variations are very large, some children reading at the rate of 130 words a minute, and others at over 700 words a minute, while some report as few details as seven, although others can report as many as 30 details. This latter standard is above what is found to be the average capacity for silent reading in pupils who have graduated from high school.

Tests given in Boston show that in ability to read the newspaper — the people's textbook — eighth grade pupils are far behind the average of high school graduates, but with a considerable overlapping and variation in individual pupils. This result is all the more interesting in view of the fact that reading, as such, is not specially taught in the high school course. It is evident that there are a great many pupils in the eighth grade and even some in the high schools who must read the newspaper with such slowness and difficulty that the operation can give them but little pleasure or satisfaction. As for reading of a more difficult character, they are at a still greater disadvantage. It is obvious that inability to read easily the simple text of a daily newspaper handicaps an individual for citizenship. An equality of opportunity no longer exists between him and the more efficient reader for getting the ideas upon which our life as a community depends.

The facts that we have been considering show that there

is opportunity enough left for improving the reading capacity of pupils of the eighth grade. This would be true of the average, and particularly true of the lower half of the class, many of whom read no better than pupils in the fourth and fifth grades. To what extent they can be improved is not at present known. The averages which are obtained from tests applied in different parts of the country are remarkably alike and generally independent of the time devoted to teaching. This is true of other subjects, also, such as Arithmetic and Spelling. It would seem that the averages obtained are not really norms, but may very probably be like the average death-rate of a community before proper sanitary measures have been undertaken. No school system has heretofore undertaken to diagnose the individual pupils in a class as to their capacity to read silently and to discover what are the causes which result in inefficient reading. In an investigation recently made it was shown that faulty eye-movements were the cause in over 50 per cent of poor readers. They have acquired the bad habit of breaking up the newspaper line into six or seven portions, taking a separate look at every word or sometimes at separate portions of the same line. They make sure that the word is really there upon the line before going on to the next word. This, however, takes time and engrosses the attention to the exclusion of relationships of the words and the general meaning of phrases and larger combinations. It is a habit which has sometimes been started in the lower grades and under the influence of the teacher who cautions the pupils to be sure of every word. Good readers have an entirely different habit. In reading a newspaper line they are able to take in at one glance nearly half the line. Resting on this for about a third of a second the eye jumps to the next section of the line, and finally rests for a moment at the end. These facts have been found by photographing the movements of the eyes while reading, and no reader has yet been found who makes fewer than three stops on a single newspaper line. Besides seeing the words in the line, however, which is in the focus, with good readers, the eye also takes in a word or so further up or further down. A word which is registered further down probably serves as a

headline does, to suggest what is coming and to enable the reader to understand the next line with greater rapidity. Readers of faulty habits of eye-movements associated with narrow visual scope can in most cases be improved rather rapidly by practice with a machine which exposes a part of the line of the same length as that seen by a good reader and covers it up in a time which can be gradated or geared up until the minimum of about one-third of a second is obtained. Practice for less than a month has been shown in the case of high school graduates to break up the fumbling habit and to increase their rate of reading to above the average of the class.

There are, however, other faulty mechanical habits which result in slow and inefficient reading. All readers pronounce to some extent the words they read; good readers telescoping the words together so that the operation takes much less time than a perfect pronunciation would. (This fact carries with it as a corollary the necessity of special teaching in oral speech, particularly for fast readers.) Slow readers not only pronounce the words mentally more completely, but they often actually move some part of the vocal apparatus. They have frequently been prevented in the lower grades from moving their lips, but this does not prevent them from moving the tongue behind the teeth, and thus tying their reading to the rate at which they could read aloud.

Besides defective mechanical habits, however, there is a class of inefficient readers (about 30 per cent) who are so because they do not readily comprehend the ideas of the text they are reading. Especially when any word of even a slightly abstract character makes its appearance they delay for some fraction of a second longer than is necessary for a faster reader. When these pupils are asked to give the associations that come to their minds in connection with such a word, it is found that their responses are comparatively slow as well as meager. This is not a fault that can be corrected so quickly as can a deficiency in mechanical habit. It represents a lack of understanding, but not necessarily a native defect of intelligence. This class of poor readers have not obtained from their past experience either in school or at

home familiarity with conceptions which are commonplaces with more efficient readers.

Special instruction, special reading and discussion along the lines indicated by the words at which they hesitate would seem to be the treatment needed in order to advance these individuals. It is obvious, however, that the same list of words would also throw a light on the kind of requirements and class of ideas necessary for discussions in the grades below the eighth, if the school is to prevent the recurrence of similar deficiencies in later years. In order to supplement such a list of words, frequency tables of words occurring in the daily newspapers and other simple texts should be made. Those words occurring with the greatest frequency, when properly classified under their respective subjects, geography, history, civics, etc., represent the ideas which the pupil should be the most familiar with in the lower grades. Such a frequency table would form a *control* (although not the only one) for the material taught in these grades.

As a consideration of the facts just enumerated indicates, the first essential in a demonstration school would be a scientific analysis of the situation. This presupposes, in the first place, that each individual should be diagnosed in respect to his present ability in the subject which is required to be taught, and the causes for his present condition carefully determined. In the second place, the ability of the normal adult or at least of the high school graduate in the same subject should also be determined.

There still remains the important question of method, or ways and means, organization and incentive that will inspire the pupil to move with reasonable rapidity towards a sufficient mastery of the subject to be learned.

The keynote of this method would probably be found in the active co-operation of the pupil. The tests will show him where he is and how far he must go before he is able to read an easy text like the newspaper with pleasure as well as profit. Small groups of pupils might be formed or teams composed of pupils with similar difficulties. They should learn to test themselves in rate of reading and power to reproduce, at least in the higher grades. They should make out lists of words over which they

hesitate and discuss the meaning of those words with one another. Besides this they should find easy material in which they are interested and which they can read fluently and with enjoyment. They should tell one another verbally what they have read, and make it comprehensible and interesting to their hearers. The teacher should keep in touch with these activities, which should be largely organized by the pupils themselves. The school-room would come to have the aspect of a laboratory or a shop for which directions could be issued beforehand to groups and to individuals, but in which pupils would be working according to their capacities, not singly, but with the stimulus of helpful comradeship, and with a clear understanding of what they are working for.

It would be no part of the policy of a demonstration school to proceed on any method without frequently testing the results obtained and comparing them with results found when neither special diagnosis nor differentiated and self-active methods had been employed. It would only be when higher averages and lessened retardation could be demonstrated that the procedure employed could be recommended to other schools.

What has thus been roughly sketched as a possibility in the subject of silent reading should be carried out with the other subjects of the school program. One subject should not be worked out at the expense of others.

In arriving at a greater ability in reading, for example, more time or greater emphasis should not be required. Advantage should, however, be taken of the correlation or overlapping of subjects. Like processes should be learned and practiced together although they may occur in subjects given a different name. A great deal of Grammar and Composition, for example, can easily form part of the subject of Reading. During the most of the grades it would seem reasonable that the three R's should receive the greatest attention. As we have already seen in the case of Reading, when properly understood this subject covers a very large part not only of an elementary education but of any education whatsoever.

The means of diagnosis, the results to be arrived at and the methods to be employed are not the only features to be considered in the establishment of such a demonstration school. The task of organizing such work in any school presents a problem which is by no means easy for a teacher who has not seen such a scheme in practice. It would be necessary, therefore, to select a certain number of teachers by transfer or otherwise, who would be in sympathy with such an undertaking and capable of carrying it out, and to provide them with an expert of sufficient experience who could not only test scientifically but institute and guide the kind of organization which would be required. The principal of a school who has in charge a great deal of detail could not be expected to add such responsibilities to his duties. The relation of such an expert to the school system would be like that which has already been found to work successfully in scientific management in factories. The change in organization is made slowly, no violent or radical transformation being suddenly attempted. The superintendent of the factory and the manager are needed as much as ever while these changes are under way. The expert or "scientific manager" does not need to be on the ground continuously. His services for one day a week for three years or more are frequently found to be the best arrangement to put the factory on a new and more profitable basis. It would seem that a similar arrangement would be found to be the most practicable also for an educational institution. At the beginning it would be likely that extensive transfers of teachers would not be necessary. It would probably be better for the first year to get half a dozen grades well established before extending the work throughout the rest of the school.

As for the grades that are taken, those of the Junior High School or perhaps the fourth, fifth, sixth, seventh and eighth grades would yield the readiest returns, since the pupils in these grades are more capable of individualized and co-operative work than those of the lower grades, while on the other hand they are not subject to the special and sometimes artificial requirements necessary for entrance to higher institutions.

Besides the expert and the selected teachers there ought also to be provided one extra teacher or clerk for the purpose of making elaborate records of everything that is done. Tabulations should be made and charts prepared, photographs of work as it is going on, and descriptions of the work should be obtained. Further than this the parents should be interviewed as to their plans and prospects for the children and as to their observation of the nature and character of the child; a work which would also result in a sort of social survey of the neighborhood of the school. Everything should be done to make the activities of the community dovetail into the activities going on in the school. Parents should be invited to evening meetings in which photographic slides of schoolroom activities could be observed and explained. The methods of procedure and the results obtained should be made perfectly plain first of all to the parents concerned.

From time to time certain classes in other schools might be chosen to try out some plan. Teachers would be invited to suggest plans which they would like to try out under expert advice. Thus the whole force would benefit by the opportunity for participation in a scientifically conducted enterprise even before results of general validity were secured. Teachers would feel that their help in the general research work of the school system was desired and valued.

In some cities bureaus for educational measurements have been added to the equipment as a result of educational surveys. However useful such bureaus may be, they leave a great deal to be desired in the line of positive reconstruction of educational effort. It is obvious that a demonstration school such as is here suggested rather than fully outlined would not only provide measurements for the school itself but would make these measurements of some use in producing more favorable results, and in finally establishing not mere averages but norms capable of being used as demonstrated standards for the guidance of other schools. It would seem that a progressive community like that of Brookline could well afford to take the lead in such a matter, and contribute something of value not only for itself but for the benefit of education throughout the country at large.

APPENDIX

APPENDIX TABLE NO. 1.

NATIVITY OF THE POPULATION OF CITIES OF 25,000 TO 31,000
POPULATION IN UNITED STATES, 1910.

<i>Cities</i>	—Native White—			<i>Negro</i>
	<i>Native Parentage</i>	<i>Foreign or Mixed Parentage</i>	<i>Foreign Born White</i>	
1. Shenandoah, Pa.	17.5	41.9	40.6	.0
2. Niagara Falls, N. Y.	25.4	34.1	39.6	.9
3. Chicopee, Mass.	18.2	42.2	39.5	.0
4. Lorain, Ohio.	29.3	31.6	37.8	1.3
5. Lewiston, Me.	31.2	32.7	35.9	.2
6. Nashua, N. H.	32.9	32.6	34.4	.1
7. Warwick Town, R. I.	28.4	37.0	33.8	.6
8. Sheboygan, Wis.	20.3	46.8	32.8	.0
9. Stamford, Conn.	32.2	34.3	32.1	1.3
10. New Rochelle, N. Y.	29.7	34.1	30.1	6.1
11. Brookline, Mass.	41.8	27.3	30.0	.8
12. Norwich, Conn.	31.1	36.8	29.8	2.2
13. South Omaha, Neb.	32.4	34.4	29.8	2.7
14. Meriden, Conn.	27.0	43.0	29.5	.5
15. Waltham, Mass.	37.1	35.0	27.6	.2
16. Orange, N. J.	28.2	36.2	27.2	8.4
17. Mt. Vernon, N. Y.	37.0	34.1	26.0	2.9
18. Hazleton, Pa.	33.2	43.1	23.6	.1
19. Watertown, N. Y.	49.1	27.1	23.4	.3
20. Newport, R. I.	36.3	34.6	23.0	5.9
21. Aurora, Ill.	41.0	35.5	22.5	1.0
22. Elgin, Ill.	39.8	37.7	21.8	.7
23. San Jose, Cal.	45.5	31.3	20.1	.6
24. La Crosse, Wis.	33.4	46.5	19.9	.2
25. Clinton, Iowa.	44.4	34.8	19.1	1.7
26. Ogden, Utah.	45.4	34.7	17.4	.8
27. Newburgh, N. Y.	50.7	29.8	17.3	2.2
28. Madison, Wis.	42.5	40.2	16.3	.6
29. Poughkeepsie, N. Y.	54.7	26.6	16.2	2.5
30. Green Bay, Wis.	35.6	47.9	16.1	.2

APPENDIX TABLE NO. 1 — Continued

<i>Cities</i>	<i>—Native White—</i>			<i>Negro</i>
	<i>Native Parentage</i>	<i>Foreign or Mixed Parentage</i>	<i>Foreign Born White</i>	
31. Council Bluffs, Iowa.....	57.7	26.2	14.6	1.1
32. Norristown, Pa.....	61.7	20.2	14.4	3.6
33. Pasadena, Cal.....	62.8	19.4	14.2	2.5
34. Bloomington, Ill.....	56.8	26.8	13.2	3.1
35. Kingston, N. Y.....	57.0	27.4	13.1	2.4
36. Newport, Ky.....	51.2	35.6	11.2	1.9
37. Easton, Pa.....	71.4	16.6	10.9	1.0
38. Battle Creek, Mich.....	69.3	18.1	10.4	2.3
39. Colorado Springs, Colo.....	67.4	18.4	10.3	3.8
40. Waterloo, Iowa.....	65.9	23.9	10.1	.1
41. Austin, Tex.....	53.2	13.5	8.2	25.0
42. Newark, Ohio.....	75.1	15.4	8.1	1.4
43. Danville, Ill.....	70.0	17.5	7.2	5.3
44. Zanesville, Ohio.....	74.5	14.8	5.7	4.9
45. Lima, Ohio.....	76.9	14.6	5.3	3.2
46. Waco, Tex.....	63.3	8.7	4.9	23.0
47. Muskogee, Okla.....	60.1	5.6	2.1	31.0
48. Columbia, S. C.....	51.9	2.5	1.7	43.9
49. Wilmington, N. C.....	48.2	3.0	1.7	47.0
50. Lynchburg, Va.....	63.5	2.8	1.5	32.1

APPENDIX TABLE NO. 2.

PERCENTAGE OF POPULATION ACCORDING TO AGE IN ALL CITIES
BETWEEN 25,000 AND 31,000, 1910.

<i>Cities</i>	<i>5 to 14</i>	<i>Under 15</i>
1. Hazleton, Pa.	22.7	35.5
2. Shenandoah, Pa.	21.9	37.1
3. Green Bay, Wis.	20.6	32.3
4. Waco, Tex.	20.2	29.9
5. Ogden, Utah.	20.1	32.1
6. Warwick (Town), R. I.	19.9	30.4
7. South Omaha, Neb.	19.9	32.0
8. Chicopee, Mass.	19.8	33.1
9. Sheboygan, Wis.	19.6	30.5
10. Orange, N. J.	18.7	29.8
11. Lewiston, Me.	18.7	28.5
12. Austin, Tex.	18.6	27.3
13. Meriden, Conn.	18.4	28.0
14. Lorain, Ohio.	18.4	31.9
15. Wilmington, N. C.	18.4	29.4
16. Mt. Vernon, N. Y.	18.4	28.3
17. La Crosse, Wis.	18.2	26.9
18. Lynchburg, Va.	18.1	28.6
19. New Rochelle, N. Y.	18.0	28.8
20. Stamford, Conn.	17.9	28.9
21. Council Bluffs, Ia.	17.9	27.2
22. Danville, Ill.	17.8	26.8
23. Shreveport, La.	17.7	26.8
24. Lima, Ohio.	17.6	27.1
25. Norwich, Conn.	17.6	26.7
26. Columbia, S. C.	17.5	27.3
27. Nashua, N. H.	17.5	27.2
28. Newport, Ky.	17.3	26.3
29. Kingston, N. Y.	17.1	25.3
30. Clinton, Ia.	16.9	25.3
31. Muskogee, Okla.	16.6	25.9
32. Newburgh, N. Y.	16.6	24.4
33. Aurora, Ill.	16.4	25.2
34. Waltham, Mass.	16.4	24.4
35. Newark, Ohio.	16.2	24.6
36. Easton, Pa.	16.0	24.7
37. Niagara Falls, N. Y.	15.9	26.7
38. Colorado Springs, Colo.	15.9	23.2
39. Waterloo, Ia.	15.7	25.2

APPENDIX TABLE NO. 2 — Continued

<i>Cities</i>	<i>5 to 14</i>	<i>Under 15</i>
40. Elgin, Ill.	15.7	23.0
41. Madison, Wis.	15.5	24.3
42. Bloomington, Ill.	15.5	23.5
43. Zanesville, Ohio.	15.4	24.2
44. Watertown, N. Y.	15.1	23.7
45. Norristown, Pa.	15.0	23.4
46. Poughkeepsie, N. Y.	15.0	23.3
47. Newport, R. I.	14.9	23.1
48. San Jose, Cal.	14.4	22.2
49. Battle Creek, Mich.	13.9	21.9
50. Pasadena, Cal.	13.6	20.3
51. Brookline, Mass.	12.9	19.3

APPENDIX TABLE NO. 3.

PERCENTAGE OF POPULATION ACCORDING TO AGE IN 12
SELECTED CITIES.

<i>Cities</i>	<i>5 to 14</i>	<i>Under 15</i>
1. Yonkers, N. Y.	18.8	30.1
2. New Rochelle, N. Y.	18.0	28.8
3. Boston, Mass.	16.7	26.2
4. Newton, Mass.	16.7	25.4
5. Springfield, Mass.	15.9	25.2
6. Colorado Springs, Colo.	15.9	23.2
7. Madison, Wis.	15.5	24.3
8. Berkeley, Cal.	14.7	22.7
9. Pasadena, Cal.	13.6	20.3
10. San Diego, Cal.	13.4	20.2
11. Los Angeles, Cal.	13.0	20.1
12. Brookline, Mass.	12.9	19.3

APPENDIX TABLE NO. 4.

ANALYSIS OF BROOKLINE OCCUPATIONS.

Statistics, 1910, Based upon Bureau of Census Report on Population, 1910, page 214.

Specific Occupations	Total No.		Proprietor and Firm Members		Salaried Officers of Corporations; Supt. and Managers		Clerks and other Subordinate Salaried Employees		Laborers and Wage Earners		Total No.		Proprietor and Firm Members		Salaried Officers of Corporations; Supt. and Managers		Clerks and other Subordinate Salaried Employees		Laborers and Wage Earners	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Agriculture, Forestry and Animal Industry.....	286		47		4		0		235		5		.....		.....		.....		5	
Extraction of Minerals.....	100		16.5		1.4		.....		82.1		100		.....		.....		.....		100	
Manufacturing and Mechanical Industries.....	12		0		10		1		1		0		.....		.....		.....		.....	
Transportation.....	100		233		83.3		8.3		8.3		.....		.....		.....		.....		.....	
Trade.....	1588		14.7		31.6		2.1		51.6		412		287		10		0		115	
Public Service.....	100		42		41		291		410		100		69.6		2.4		.....		28.0	
Professional Service.....	784		5.4		5.2		37.1		52.3		70		5		0		65		0	
Domestic and Personal Service.....	100		1006		8		884		138		197		37		4		150		6	
Clerical Occupations.....	298		49.4		4		43.4		6.8		100		18.8		2.0		76.1		3.1	
Total.....	100		0		47		126		125		0		.....		.....		.....		.....	
	100		.....		15.8		42.3		41.9		.....		.....		.....		.....		.....	
	803		573		56		171		3		495		125		1		364		5	
	100		71.3		7.0		21.3		4		100		25.3		.2		73.5		1.0	
	758		70		0		18		670		4352		68		0		103		4181	
	100		9.2		.....		2.4		88.4		100		1.6		.....		2.3		96.1	
	538		0		0		500		38		396		0		0		392		4	
	100		.....		.....		93.0		7.0		100		.....		.....		99.0		1.0	
Total.....	7103		1971		667		2024		2441		5927		522		15		1074		4316	
	100		27.8		9.4		28.5		34.3		100		8.8		.3		18.1		72.8	

APPENDIX TABLE NO. 5.

ESTIMATED NUMBER OF TAXABLES, PAYING VARIOUS AMOUNTS
OF TAXES, UPON VARIOUS AMOUNTS OF PROPERTY, IN
BROOKLINE, MASS.
1915.*

<i>Amount of Taxes Paid 1</i>	<i>Value of Property (Lower Amount) 2</i>	<i>Number of Taxables Counted 3</i>	<i>Per Cent of Total Counted 4</i>	<i>Estimated Number of Taxables 5</i>
Less than				
\$25	.....	341	25.64	844
25-49	\$1,773.50	154	11.58	381
50-74	3,547.00	96	7.22	238
75-99	5,320.50	55	4.14	136
100-124	7,094.00	84	6.32	208
125-149	8,865.50	88	6.62	218
150-174	10,639.00	74	5.57	183
175-199	12,412.50	50	3.77	124
200-224	14,188.00	46	3.45	114
225-249	15,961.50	31	2.33	77
250-274	17,735.00	29	2.18	72
275-299	19,508.50	25	1.88	62
300-324	21,282.00	18	1.35	44
325-349	23,055.50	8	.60	20
350-374	24,829.00	16	1.20	39
375-399	26,602.50	16	1.20	39
400-424	28,376.00	18	1.35	45
425-449	30,149.50	16	1.20	39
450-474	31,923.00	11	.83	29
475-499	33,696.50	6	.45	15
500-524	35,470.00	8	.60	20
525-549	37,243.50	8	.60	20
550-574	39,017.00	9	.67	22
575-599	40,790.50	7	.52	17
600-624	42,564.00	7	.52	17
625-649	44,337.50	1	.07	2
650-674	46,111.00	1	.07	2
675-699	47,884.50	5	.38	13
700-724	49,658.00	9	.67	22
725-749	51,431.50	5	.37	12
750-774	53,205.00	1	.07	2
775-799	54,978.50	0	0	0

APPENDIX TABLE NO. 5 — Continued

<i>Amount of Taxes Paid</i> 1	<i>Value of Property (Lower Amount)</i> 2	<i>Number of Taxables Counted</i> 3	<i>Per Cent of Total Counted</i> 4	<i>Estimated Number of Taxables</i> 5
\$800-824	\$56,752.00	6	.45	15
825-849	58,525.50	5	.37	12
850-874	60,299.00	1	.07	2
875-899	62,072.50	8	.6	20
900-924	63,846.00	2	.15	5
925-949	65,619.50	4	.31	10
950-974	67,393.00	2	.15	5
975-999	69,166.50	1	.07	2
1000-1499	{ 70,940.00	32	.24	79
	{ 106,389.00			
1500-1999	{ 106,390.00	7	.52	17
	{ 141,879.00			
2000	141,880.00	13	.98	32
3000	212,820.00	1	.07	2
4000	283,760.00	2	.15	5
5000	354,700.00	1	.07	2
6000	425,640.00	2	.15	5
7000	496,580.00	0	0	0
8000	567,520.00	0	0	0
9000	638,460.00	1	.07	2
Total		1330	100.00	3290

* This table was prepared in following manner from "List of Polls and Property Assessed in the Town of *Brookline, Mass.*, for the Year 1915." Column 3, the first derived, was obtained by using the first five names upon each of the 266 pages. Column 4 was then computed, and upon the basis of these percentages the 3290 persons paying property taxes were distributed in Column 5. Column 2 was inserted later. The amounts of property are for the lower limit of each step, \$25, \$50, \$75, etc.

APPENDIX TABLE NO. 6.

ASSESSED VALUATION PER CAPITA, 1912, IN ALL CITIES HAVING
FROM 25,000 TO 31,000 POPULATION IN 1915 — FROM CENSUS
REPORT ON WEALTH, DEBT AND TAXATION, 1913, PAGE 841.

<i>Cities</i>	<i>Assessed Valuation per Capita</i>	<i>Basis of Assessment</i>	<i>True Valuation</i>
1. South Omaha, Neb.	\$983.91	20	\$4,919.55
2. Brookline, Mass.	3,659.92	100	3,659.63
3. Pasadena, Cal.	1,171.35	49	2,390.51
4. Newport, R. I.	1,862.01	100	1,862.01
5. New Rochelle, N. Y.	1,072.97	60	1,788.30
6. Shreveport, La.	522.11	30	1,740.37
7. Madison, Wis.	1,356.09	80	1,695.11
8. Wilmington, N. C.	472.97	30	1,576.56
9. Lynchburg, Va.	1,104.31	75	1,472.15
10. Columbia, S. C.	359.25	25	1,437.00
11. Waco, Tex.	937.08	67	1,398.63
12. Muskogee, Okla.	1,032.78	75	1,377.04
13. Lorain, Ohio.	1,370.92	100	1,370.92
14. Stamford, Conn.	1,193.31	90	1,325.90
15. Mt. Vernon, N. Y.	1,044.71	80	1,305.90
16. Ogden, Utah.	503.28	40	1,258.02
17. Colorado Springs, Colo.	400.77	33	1,202.31
18. Danville, Ill.	388.68	33	1,166.04
19. Niagara Falls, N. Y.	1,029.40	90	1,143.78
20. Battle Creek, Mich.	770.52	75	1,094.03
21. San Jose, Cal.	648.61	60	1,081.07
22. Shenandoah, Pa.	116.28	70	1,023.26
23. Poughkeepsie, N. Y.	763.76	75	1,018.34
24. Newark, Ohio.	1,006.02	100	1,006.02
25. Waltham, Mass.	993.29	100	993.29
26. Warwick, R. I.	975.12	100	975.12
27. Bloomington, Ill.	318.73	33	956.19
28. Elgin, Ill.	317.65	33	952.95
29. Lima, Ohio.	936.38	100	936.38
30. Austin, Tex.	687.82	75	917.09
31. Easton, Pa.	639.01	70	912.86
32. Norristown, Pa.	434.79	50	869.58
33. Nashua, N. H.	846.53	100	846.53
34. Aurora, Ill.	277.63	33	832.89
35. La Crosse, Wis.	656.03	80	820.04
36. Meriden, Conn.	424.19	90	804.65
37. Lewiston, Me.	632.63	80	790.80

APPENDIX TABLE NO. 6 — Continued

<i>Cities</i>	<i>Assessed Valuation per Capita</i>	<i>Basis of Assessment</i>	<i>True Valuation</i>
38. Watertown, N. Y.....	\$563.62	75	\$751.49
39. Sheboygan, Wis.....	576.85	80	719.22
40. Norwich, Conn.....	630.06	90	700.07
41. Waterloo, Iowa.....	172.67	25	690.68
42. Green Bay, Wis.....	633.04	80	689.13
43. Orange, N. J.....	682.85	100	682.85
44. Newport, Ky.....	508.49	75	657.98
45. Kingston, N. Y.....	452.97	75	603.96
46. Council Bluffs, Ia.....	150.66	25	602.64
47. Chicopee, Mass.....	555.33	100	555.33
48. Newburgh, N. Y.....	416.01	75	554.68
49. Hazleton, Pa.....	342.20	70	488.86
50. Jonesville, Ohio.....	944.66	100	944.66
51. Clinton, Iowa.....	122.34	25	489.36

APPENDIX TABLE NO. 7.

DISTRIBUTION OF EXPENSES OF MUNICIPAL GOVERNMENTS.

<i>Cities</i>	<i>General Government</i>	<i>Protection Persons and Property</i>	<i>Health Sanitation</i>	<i>Highways</i>	<i>Charities</i>	<i>Schools</i>	<i>Libraries</i>	<i>Recreation</i>	<i>Unclassified</i>
Berkeley, Cal.....	8.3	18.8	5.1	8.8	1.2	53.5	2.4	1.8	.1
Pasadena, Cal.....	7.5	12.6	8.6	14.4	1.0	46.3	2.5	5.7	1.5
San Diego, Cal.....	2.7	23.0	6.7	16.0	...	33.9	1.7	6.0	3.6
Colorado Springs, Colo..	9.7	14.5	5.9	14.8	.6	44.2	1.4	6.3	.5
Brookline, Mass.....	6.9	23.3	12.0	18.7	2.0	23.8	3.0	8.9	1.4
Newton, Mass.....	6.9	15.9	11.6	13.4	3.3	35.5	2.8	8.8	.8
Springfield, Mass.....	5.3	23.0	9.8	12.5	3.6	33.6	2.6	3.9	5.5
East Orange, N. J.....	7.0	18.3	13.0	13.0	1.3	41.5	2.5	2.2	1.2
New Rochelle, N. Y.....	12.9	15.0	10.3	12.1	4.1	38.1	1.7	4.5	1.1
Yonkers, N. Y.....	12.0	22.4	13.9	11.6	6.1	30.8	.6	1.2	1.2
Cities having population of 50,000.....	8.7	21.2	8.7	13.2	3.8	38.5	1.5	2.7	1.7
Boston, Mass.....	9.6	20.9	11.4	11.4	9.4	25.3	1.8	6.0	4.1
Los Angeles, Cal.....	12.6	15.9	6.6	17.5	5.0	35.0	1.3	3.0	3.1

PER CENT DISTRIBUTION OF EXPENSES.

Rank of Brookline..... | 9 | 1 | 4 | 1 | 6 | 11 | 1 | 1. | 5

APPENDIX TABLE NO. 8.

NUMBER AND PER CENT OF PUPILS WHO ARE OVER AGE,
NORMAL AGE AND UNDER AGE BY SCHOOLS 1916-17.

Building	Total	Under Age	Normal Age	Over Age	Per Cent Under Age	Per Cent Normal Age	Per Cent Over Age
Devotion.....	577	49	236	292	8.5	41	50.5
Newton.....	10	1	5	4	10.0	50	40.0
Heath.....	327	3	104	220	.9	32	67.1
Lincoln.....	465	7	154	304	2.0	33	65.0
Parsons.....	44	1	36	7	2.0	82	16.0
Sewall.....	83	2	55	26	3.0	66	31.0
Pierce.....	651	25	277	349	4.0	42	54.0
Driscoll.....	204	6	84	114	3.0	41	56.0
Runkle.....	402	27	156	219	7.0	29	54.0
Lawrence.....	203	14	79	110	6.0	39	55.0
Cabot.....	62	2	25	35	3.0	40	57.0
Longwood.....	52	1	14	37	2.0	27	71.0
Total	3080	138	1225	1717	5.0	40	55.0

APPENDIX TABLE NO. 9.

NUMBER AND PER CENT OF PUPILS MAKING RAPID, NORMAL
AND SLOW PROGRESS BY SCHOOLS 1916-17.

Building	Accelerated Progress	Normal Progress	Retarded Progress	Normal Progress and Age	Accelerated Progress Per Cent	Per Cent Normal Progress	Retarded Progress Per Cent
Devotion.....	81	390	106	204	14	68	18
Newton.....	0	10	0	5	0	100	0
Heath.....	10	189	128	85	3	58	39
Lincoln.....	0	339	126	151	0	73	27
Parsons.....	0	41	3	36	0	93	7
Sewall.....	1	65	17	55	1	78	21
Pierce.....	28	436	187	268	4	67	29
Driscoll.....	16	170	18	76	8	83	9
Runkle.....	76	281	45	122	19	70	11
Lawrence.....	22	147	34	67	11	73	16
Cabot.....	33	45	14	24	5	72	23
Longwood.....	0	36	16	14	0	69	31
All schools	237	2149	694	1117	8	69	23

The following tables show the results in the Standard Tests by section, grade and school.

The scores are in terms of the medians, except in the case of the spelling tests, where the averages are used.

The median or average variation of each score is given in parentheses below it. These variations mark the limits within which approximately half of the scores fall. For example, a median of 60 with a variation of five means that half of the individual scores fall between 55 and 65.

TABLE NO. 10.

NUMBER OF PUPILS TESTED.

<i>School</i>	<i>Grade IV</i>	<i>Grade V</i>	<i>Grade VI</i>	<i>Grade VII</i>	<i>Grade VIII</i>
Devotion.....	38 41	22 33	34 33	25 26	33 27
Combined.....	79	55	67	51	60
Driscoll.....	30	26	..	..	..
Heath.....	37	38	38	34	30
Lawrence.....	43	44	35	29	26
Lincoln.....	35 26	29 28	31 30	27 29	27 26
Combined.....	61	57	61	56	53
Pierce.....	39 34	26 34	40 41	26 26 28	31 36
Combined.....	73	60	81	80	67
Runkle.....	..	..	29 30	30 29	..
Combined.....	37	40	59	59	45
All schools.....	360	320	341	309	281

These figures express the maximum number of pupils tested. Because of absences, the actual number of papers obtained in a single test was often one or two less than the number appearing in the table.

TABLE NO. 11.

MEDIAN AGE BY GRADES.

<i>School</i>	<i>Grade IV</i>		<i>Grade V</i>		<i>Grade VI</i>		<i>Grade VII</i>		<i>Grade VIII</i>		
Devotion.....	10	10	11	11	12	12	13	12	14	14	
	(1)	(0)	(0)	(1)	(0)	(1)	(1)	(1)	(1)	(1)	
Combined.....	10		11		12		13		14		
	(1)		(1)		(1)		(1)		(1)		
Driscoll.....	10		11		..		..		..		
	(0)		(1)		..		..		..		
Heath.....	10		12		13		14		15		
	(1)		(1)		(1)		(1)		(1)		
Lawrence.....	10		11		12		13		14		
	(0)		(1)		(0)		(1)		(0)		
Lincoln.....	10	10	12	12	13	13	13	14?	15	15	
	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(0)	(1)	(1)	
Combined.....	10		12		13		14?		15		
	(1)		(1)		(1)		(1)		(1)		
Pierce.....	10	10	11	12?	12	12	13	13	13	14	14
	(1)	(1)	(1)	(1)	(1)	(1)	(0)	(1)	(0)	(1)	(1)
Combined.....	10		11		12		13		14		
	(1)		(1)		(1)		(1)		(1)		
Runkle.....	..	..	..	..	12	12	13	13	..	..	
	..	..	..	..	(1)	(1)	(1)	(0)	..	..	
Combined.....	10		11		12		13		14		
	(1)		(0)		(1)		(1)		(1)		
All schools.....	10		11		12		13		14		
	(1)		(1)		(1)		(1)		(1)		

The figures in this table express the median ages of the pupils by grades, the age being taken as that at the nearest birthday. A question mark after a median indicates that the age was very close to the next year below.

TABLE NO. 12.
COURTIS ARITHMETIC TESTS.

(a) *Speed of Addition.*

<i>School</i>	<i>Grade</i> <i>V</i>		<i>Grade</i> <i>VI</i>	
	7	9	7	8
Devotion.....	(2)	(2)	(1)	(2)
Combined.....	8		8	
	(2)		(2)	
Driscoll.....	7		..	
	(1)		..	
Heath.....	9		10	
	(1)		(2)	
Lawrence.....	10		8	
	(2)		(2)	
Lincoln.....	9	8	8	8
	(2)	(2)	(2)	(1)
Combined.....	8		8	
	(2)		(2)	
Pierce.....	8	6	8	9
	(1)	(1)	(1)	(2)
Combined.....	7		9	
	(1)		(2)	
Runkle.....	7		8	8
	(2)		(2)	(1)
Combined.....	..		8	
			(2)	
All schools.....	8		8	
	(2)		(2)	

The scores in this table express the median number of examples attempted.

TABLE NO. 13.
COURTIS ARITHMETIC TESTS.

(b) *Accuracy of Addition.*

<i>School</i>	<i>Grade</i> <i>V</i>		<i>Grade</i> <i>VI</i>	
Devotion.....	57	58	64	88
	(19)	(13)	(14)	(12)
Combined.....	57		71	
	(14)		(21)	
Driscoll.....	71		..	
	(16)		..	
Heath.....	60		50	
	(16)		(17)	
Lawrence.....	71		78	
	(11)		(14)	
Lincoln.....	70	65	67	70
	(16)	(12)	(15)	(20)
Combined.....	67		67	
	(12)		(17)	
Pierce.....	60	50	57	69
	(22)	(25)	(14)	(16)
Combined.....	57		64	
	(23)		(20)	
Runkle.....	60		70	71
	(22)		(18)	(15)
Combined.....	..		70	
	..		(18)	
All schools.....	62		67	
	(18)		(17)	

The scores in this table express the median number of examples correctly done.

TABLE NO. 14.
COURTIS ARITHMETIC TESTS.

(c) *Speed of Subtraction.*

<i>School</i>	<i>Grade</i> <i>V</i>		<i>Grade</i> <i>VI</i>	
	7	8	10	9
Devotion.....	(1)	(2)	(2)	(1)
Combined.....	8		9	
	(2)		(2)	
Driscoll.....	7		..	
	(1)		..	
Heath.....	9		9	
	(1)		(2)	
Lawrence.....	8		8	
	(2)		(1)	
Lincoln.....	8	8	9	10
	(2)	(2)	(2)	(2)
Combined.....	8		10	
	(2)		(2)	
Pierce.....	8	6	8	8
	(1)	(1)	(2)	(2)
Combined.....	6		8	
	(1)		(1)	
Runkle.....	8		8	10
	(2)		(2)	(2)
Combined.....	..		9	
	..		(2)	
All schools.....	8		9	
	(2)		(2)	

The scores in this table express the median number of examples correctly done.

TABLE NO. 15.
COURTIS ARITHMETIC TESTS.

(d) *Accuracy of Subtraction.*

<i>School</i>	<i>Grade V</i>		<i>Grade VI</i>	
Devotion.....	71	67	73	93
	(14)	(16)	(16)	(7)
Combined.....	67		86	
	(10)		(14)	
Driscoll.....	77		..	
	(20)		..	
Heath.....	80		77	
	(10)		(13)	
Lawrence.....	71		75	
	(21)		(14)	
Lincoln.....	80	82	73	82
	(18)	(10)	(15)	(10)
Combined.....	80		78	
	(10)		(11)	
Pierce.....	67	71	67	83
	(16)	(21)	(17)	(9)
Combined.....	67		75	
	(19)		(15)	
Runkle.....	86		83	85
	(14)		(17)	(15)
Combined.....	..		83	
	..		(16)	
All schools.....	75		80	
	(15)		(13)	

The scores in this table express the median per cent of examples correctly done.

TABLE NO. 16.

COURTIS ARITHMETIC TESTS.

(e) Speed of Multiplication.

<i>School</i>	<i>Grade</i> <i>V</i>		<i>Grade</i> <i>VI</i>	
	6	8	8	8
Devotion.....	(1)	(1)	(2)	(2)
Combined.....	7		8	
	(1)		(2)	
Driscoll.....	7		..	
	(2)		..	
Heath.....	7		7	
	(2)		(1)	
Lawrence.....	7		8	
	(1)		(1)	
Lincoln.....	6	6	8	8
	(1)	(1)	(1)	(2)
Combined.....	6		8	
	(1)		(1)	
Pierce.....	6	5	7	7
	(1)	(1)	(1)	(1)
Combined.....	6		7	
	(1)		(1)	
Runkle.....	7		7	7
	(2)		(2)	(1)
Combined.....	..		7	
	..		(1)	
All schools.....	6		7	
	(1)		(1)	

The scores in this table express the median number of examples attempted.

TABLE NO. 17.

COURTIS ARITHMETIC TESTS.

(f) Accuracy of Multiplication.

<i>School</i>	<i>Grade V</i>		<i>Grade VI</i>	
	67	57	67	89
Devotion.....	(17)	(14)	(11)	(11)
Combined.....	60		80	
	(17)		(17)	
Driscoll.....	71		..	
	(17)		..	
Heath.....	67		63	
	(16)		(12)	
Lawrence.....	67		78	
	(17)		(11)	
Lincoln.....	67	86	67	80
	(17)	(14)	(17)	(10)
Combined.....	75		75	
	(25)		(12)	
Pierce.....	60	67	67	71
	(15)	(27)	(17)	(15)
Combined.....	60		70	
	(20)		(14)	
Runkle.....	83		78	83
	(16)		(22)	(17)
Combined.....	..		82	
	..		(18)	
All schools.....	67		75	
	(17)		(15)	

The scores in this table express the median per cents of examples done correctly.

TABLE NO. 18.
COURTIS ARITHMETIC TESTS.

(g) *Speed of Division.*

<i>School</i>	<i>Grade</i> <i>V</i>		<i>Grade</i> <i>VI</i>	
Devotion.....	6	6	7	9
	(1)	(1)	(2)	(2)
Combined.....	6		8	
	(1)		(2)	
Driscoll.....	5		..	
	(2)		..	
Heath.....	7		8	
	(2)		(2)	
Lawrence.....	6		9	
	(2)		(2)	
Lincoln.....	7	7	8	9
	(2)	(1)	(1)	(3)
Combined.....	7		8	
	(1)		(2)	
Pierce.....	6	4	9	8
	(1)	(1)	(1)	(2)
Combined.....	5		8	
	(1)		(2)	
Runkle.....	7		8	8
	(1)		(2)	(2)
Combined.....	..		8	
	..		(2)	
All schools.....	6		8	
	(2)		(2)	

The scores in this table express the median number of examples attempted.

TABLE NO. 19.
COURTIS ARITHMETIC TESTS.

(h) *Accuracy of Division.*

<i>School</i>	<i>Grade</i> <i>V</i>		<i>Grade</i> <i>VI</i>	
Devotion.....	83	75	85	89
	(17)	(25)	(18)	(11)
Combined.....	80		86	
	(20)		(14)	
Driscoll.....	86		..	
	(14)		..	
Heath.....	86		89	
	(14)		(11)	
Lawrence.....	78		90	
	(22)		(9)	
Lincoln.....	83	71	75	86
	(16)	(15)	(14)	(14)
Combined.....	75		83	
	(15)		(9)	
Pierce.....	67	75	88	88
	(29)	(25)	(12)	(12)
Combined.....	67		88	
	(29)		(12)	
Runkle.....	89		100	100
	(11)		(0)	(0)
Combined.....	..		100	
	..		(0)	
All schools.....	80		88	
	(20)		(12)	

The scores in this table express the median per cent of examples correctly done.

TABLE NO. 20.
STONE ARITHMETIC TEST.

<i>School</i>	<i>Grade</i> <i>V</i>		<i>Grade</i> <i>VI</i>	
Devotion.....	5.6	4.4	6.8	9.2
	(2.2)	(1.4)	(1.6)	(1.8)
Combined.....	5.2		7.8	
	(2.0)		(2.0)	
Driscoll.....	4.0		...	
	(1.4)		...	
Heath.....	3.0		6.4	
	(2.0)		(1.4)	
Lawrence.....	4.6		6.6	
	(1.8)		(1.8)	
Lincoln.....	3.0	2.0	5.0	5.0
	(2.0)	(2.0)	(1.6)	(1.0)
Combined.....	3.0		5.0	
	(2.0)		(1.4)	
Pierce.....	4.0	3.0	5.6	5.4
	(1.0)	(1.0)	(2.2)	(2.0)
Combined.....	4.0		5.4	
	(1.4)		(2.0)	
Runkle.....	5.0		7.2	6.8
	(2.1)		(2.4)	(1.6)
Combined.....	...		6.8	
	...		(2.0)	
All schools.....	4.0		6.2	
	(1.6)		(2.0)	

The scores in this table show the median value gained in the test. The values are determined on the basis of a fixed credit assigned to each example by Mr. Stone.

TABLE NO. 21.
SPELLING TESTS.

(a) *Words from Ayers Scale.*

<i>School</i>	<i>Grade IV</i>		<i>Grade V</i>		<i>Grade VI</i>		<i>Grade VII</i>		<i>Grade VIII</i>	
Devotion.....	90	92	91	91	93	91	93	94	89	92
	(9)	(7)	(9)	(10)	(7)	(7)	(7)	(5)	(9)	(8)
Combined..	91		91		92		93		90	
	(8)		(9)		(7)		(6)		(9)	
Driscoll.....	90		91		..		..		..	
	(8)		(8)		..		..		..	
Heath.....	70		84		90		91		87	
	(18)		(12)		(8)		(9)		(10)	
Lawrence.....	78		81		89		88		90	
	(16)		(14)		(8)		(11)		(8)	
Lincoln.....	77	85	86	82	86	85	87	81	70	77
	(17)	(12)	(8)	(14)	(11)	(11)	(9)	(16)	(18)	(16)
Combined..	81		83		85		84		73	
	(14)		(12)		(11)		(13)		(16)	
Pierce.....	87	86	89	89	88	94	89	94 96	94	88
	(13)	(13)	(8)	(9)	(10)	(6)	(9)	(6) (4)	(8)	(9)
Combined..	87		89		91		93		91	
	(12)		(8)		(9)		(7)		(9)	
Runkle.....	..	..	..	..	93	85	86	89	..	..
	..	..	..	..	(7)	(13)	(12)	(8)	..	..
Combined..	88		85		89		87		84	
	(16)		(12)		(10)		(10)		(12)	
All schools...	84		87		89		90		86	
	(13)		(11)		(9)		(9)		(12)	

The scores in this table express average per cents.

TABLE NO. 22.

SPELLING TESTS.

(b) *Words from Boston Lists.*

<i>School</i>	<i>Grade IV</i>		<i>Grade V</i>		<i>Grade VI</i>		<i>Grade VII</i>		<i>Grade VIII</i>		
Devotion...	62 (18)	64 (20)	72 (21)	79 (17)	86 (11)	86 (13)	69 (14)	60 (15)	89 (13)	89 (9)	
Combined	63 (19)		75 (20)		86 (12)		65 (16)		89 (11)		
Driscoll....	63 (16)		77 (16)		.. ..		.. ..		.. ..		
Heath.....	41 (17)		65 (16)		91 (10)		67 (18)		78 (17)		
Lawrence...	56 (19)		53 (21)		83 (13)		60 (18)		80 (17)		
Lincoln....	79 (13)	64 (15)	67 (16)	75 (18)	83 (15)	78 (18)	54 (16)	59 (24)	71 (16)	67 (20)	
Combined	72 (17)		71 (18)		81 (17)		56 (21)		65 (18)		
Pierce.....	57 (22)	67 (15)	72 (14)	70 (17)	81 (16)	89 (11)	66 (15)	93 (9)	62 (16)	89 (10)	83 (14)
Combined	61 (20)		71 (16)		85 (14)		76 (17)		86 (12)		
Runkle.....	.. ..		.. ..		83 (16)	78 (19)	63 (21)	65 (18)	.. ..		
Combined	64 (23)		67 (19)		80 (18)		64 (16)		79 (14)		
All schools..	61 (20)		69 (19)		84 (16)		66 (19)		80 (16)		

The scores in this table express average per cents.

TABLE NO. 23.

PENMANSHIP.

Speed of Writing.

<i>School</i>	<i>Grade V</i>		<i>Grade VI</i>		<i>Grade VII</i>		<i>Grade VIII</i>	
Devotion.....	78 (8)	84 (12)	90 (8)	88 (12)	103 (10)	104 (10)	107 (9)	117 (7)
Combined.....	80 (9)		89 (10)		104 (10)		110 (9)	
Driscoll.....	78 (7)		.. ..		... ...		... ...	
Heath.....	81 (7)		86 (6)		99 (8)		98 (11)	
Lawrence.....	79 (10)		88 (11)		104 (9)		98 (12)	
Lincoln.....	72 (8)	51 (7)	81 (10)	82 (7)	96 (6)	82 (8)	81 (12)	79 (11)
Combined.....	64 (13)		82 (9)		94 (11)		81 (12)	
Pierce.....	76 (8)	67 (7)	83 (19)	86 (6)	74 (9)	84 (9)	72 (10)	97 (14)
Combined.....	67 (9)		85 (9)		76 (9)		94 (16)	
Runkle.....	85 (7)		92 (10)	88 (13)	81 (7)	90 (12)	101 (8)	
Combined. ...	.. ..		90 (12)		82 (9)		.. ..	
All schools.....	76 (10)		87 (9)		90 (13)		98 (13)	

The scores in this table express the median number of letters written per minute.

TABLE NO. 24.

PENMANSHIP.

Quality of Writing.

<i>School</i>	<i>Grade V</i>		<i>Grade VI</i>		<i>Grade VII</i>		<i>Grade VIII</i>	
Devotion.....	44 (4)	45 (3)	45 (4)	48 (5)	47 (3)	45 (2)	53 (4)	50 (4)
Combined.....	45 (3)		46 (4)		45 (2)		51 (4)	
Driscoll.....	46 (6)		..		..		..	
Heath.....	45 (3)		47 (3)		47 (4)		46 (3)	
Lawrence.....	41 (4)		45 (3)		43 (5)		45 (3)	
Lincoln.....	48 (4)	45 (3)	46 (3)	47 (3)	47 (4)	49 (3)	47 (3)	51 (3)
Combined.....	45 (3)		46 (4)		45 (4)		51 (4)	
Pierce.....	44 (4)	46 (3)	46 (4)	44 (3)	49 (4)	50 (5)	48 (4)	51 (4)
Combined.....	45 (4)		44 (4)		48 (4)		49 (4)	
Runkle.....	..		46 (4)	46 (4)	48 (5)	48 (3)	..	
Combined.....	43 (3)		46 (4)		48 (5)		49 (6)	
All schools.....	44 (4)		46 (4)		47 (4)		49 (4)	

The scores in this table express the median quality of writing in terms of the Ayers handwriting scale.

TABLE NO. 25.

HOLMES READING TEST.

Speed of Silent Reading.

<i>School</i>	<i>Grade V</i>		<i>Grade VI</i>		<i>Grade VII</i>		<i>Grade VIII</i>	
Devotion.....	249 (60)	276 (66)	309 (72)	237 (63)	297 (66)	312 (54)	312 (73)	309 (63)
Combined.....	249 (60)		300 (72)			309 (60)		309 (63)
Driscoll.....	348 (91)		...			...		...
Heath.....	207 (42)		290 (43)			318 (45)		312 (48)
Lawrence.....	354 (105)		363 (120)			363 (66)		363 (60)
Lincoln.....	237 (75)	240 (117)	264 (45)	252 (42)	321 (75)	294 (57)	276 (51)	249 (42)
Combined.....	237 (90)		264 (45)			309 (69)		252 (43)
Pierce.....	237 (39)	234 (60)	237 (48)	249 (60)	276 (57)	237 (39)	270 (63)	318 (57)
Combined.....	234 (54)		249 (60)			258 (51)		318 (72)
Runkle.....	..		384 (122)	321 (66)	276 (54)	279 (42)		...
Combined.....	321 (84)		330 (54)			276 (52)		318 (69)
All schools.....	249 (69)		283 (80)			309 (63)		294 (69)

The scores in this table express median speeds of reading in words per minute.

TABLE NO. 26.

HOLMES READING TEST.

Reproduction of Passage Read.

<i>School</i>	<i>Grade V</i>		<i>Grade VI</i>		<i>Grade VII</i>		<i>Grade VIII</i>	
Devotion.....	60 (9)	63 (9)	57 (9)	57 (9)	60 (9)	63 (12)	60 (9)	60 (11)
Combined.....	60 (9)		57 (9)		60 (9)		60 (9)	
Driscoll.....	54 (6)		..	..	..		..	..
Heath.....	60 (9)		57 (9)		46 (8)		57 (6)	
Lawrence.....	54 (9)		57 (8)		57 (8)		63 (6)	
Lincoln.....	57 (8)	63 (8)	46 (8)	51 (9)	60 (6)	57 (6)	54 (9)	63 (8)
Combined.....	57 (9)		49 (6)		60 (6)		57 (9)	
Pierce.....	54 (8)	49 (8)	60 (11)	54 (6)	57 (9)	49 (9)	57 (6)	54 (9)
Combined.....	54 (8)		57 (6)		54 (6)		57 (8)	
Runkle.....	..		57 (9)	57 (14)	57 (8)	66 (8)	..	..
Combined.....	51 (5)		57 (11)		63 (8)		66 (6)	
All schools.....	57 (9)		57 (9)		57 (9)		60 (9)	

The scores in this table express the median per cent of ideas correctly reproduced.

TABLE NO. 27.

HOLMES READING TEST.

Answers to Questions on Passage Read.

<i>School</i>	<i>Grade V</i>		<i>Grade VI</i>		<i>Grade VII</i>		<i>Grade VIII</i>	
Devotion.....	72 (10)	65 (12)	69 (9)	67 (10)	72 (5)	72 (9)	68 (9)	73 (6)
Combined.....	69 (9)		67 (10)		72 (9)		70 (7)	
Driscoll.....	64 (6)		..		..		..	
Heath.....	65 (14)		70 (7)		65 (9)		72 (10)	
Lawrence.....	63 (13)		66 (13)		67 (13)		73 (5)	
Lincoln.....	57 (13)	58 (9)	53 (5)	58 (11)	68 (6)	73 (8)	64 (10)	75 (7)
Combined.....	57 (9)		54 (10)		70 (8)		73 (9)	
Pierce.....	63 (10)	63 (9)	68 (10)	54 (5)	72 (6)	65 (7)	67 (10)	68 (14)
Combined...	62 (9)		59 (10)		65 (7)		73 (9)	
Runkle... ..	..		68 (10)	63 (9)	67 (9)	77 (8)	..	..
Combined.....	60 (7)		64 (9)		71 (8)		73 (9)	
All schools.....	62 (11)		64 (11)		68 (9)		73 (9)	

The scores in this table express the median per cent of correct answers.

TABLE NO. 28.
COMPOSITION TEST.

<i>School</i>	<i>Grade VI</i>		<i>Grade VIII</i>	
Devotion.....	57	62	70	69
	(6)	(6)	(9)	(5)
Combined.....	61		69	
	(6)		(6)	
Heath.....	67		77	
	(5)		(9)	
Lawrence.....	61		68	
	(4)		(6)	
Lincoln.....	60	48	65	65
	(5)	(4)	(5)	(4)
Combined.....	54		65	
	(9)		(5)	
Pierce.....	66	67	73	71
	(4)	(8)	(4)	(7)
Combined.....	67		73	
	(8)		(6)	
Runkle.....	61	63	..	..
	(4)	(3)	..	..
Combined.....	62		73	
	(4)		(6)	
All schools.....	61		70	
	(6)		(7)	

The scores in this table express median per cents obtained on the basis of the Harvard-Newton scale.

